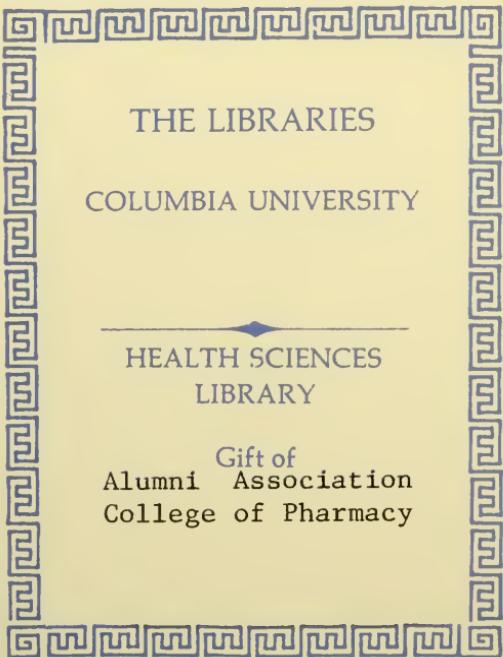




Columbia University  
in the City of New York

PRESIDENT'S  
ANNUAL REPORT

1897



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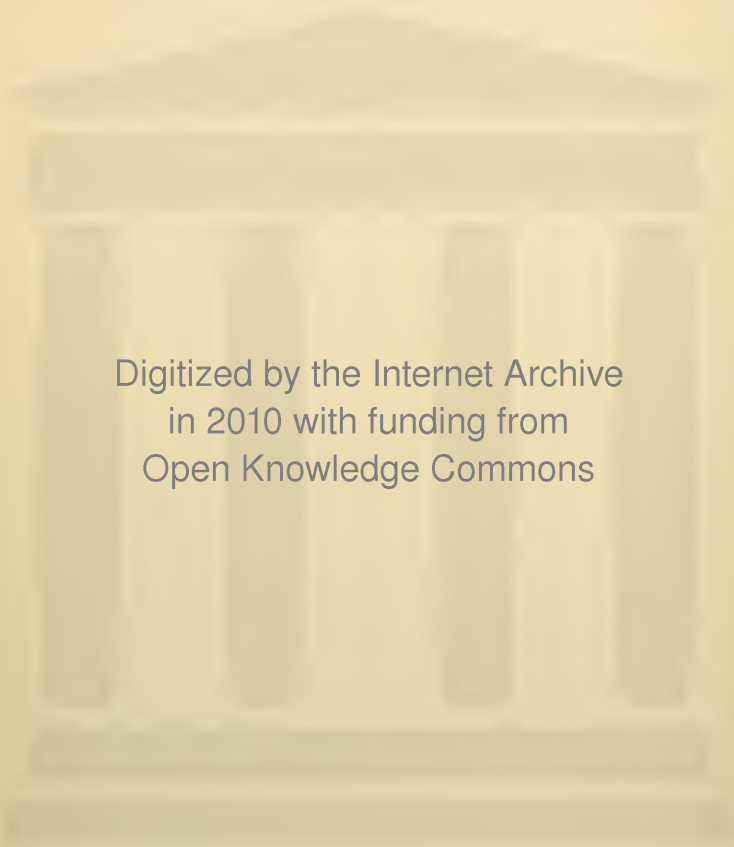
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E. T. BOAG,





Columbia University  
in the City of New York

EIGHTH  
ANNUAL REPORT  
OF  
PRESIDENT LOW  
TO THE  
TRUSTEES

OCTOBER 4, 1897

NEW YORK  
PRINTED FOR THE UNIVERSITY

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1897

*To the Trustees of Columbia College in the City of  
New York :*

I have the honor to submit herewith my annual report for the academic year ending June 30, 1897.

I am obliged to record the death of an old and faithful servant of the College, Mr. William B. Nye, who, for more than twenty years, discharged faithfully, according to his ability, the duties of the office of Registrar. The staff of the College of Physicians and Surgeons also suffered the loss of Douglas Ewell, M.D., Assistant Demonstrator of Anatomy, and of Winfield Johnson, Ph.G., Assistant Demonstrator in Chemistry and Physics.

Apart from questions brought to the front by the contemplated removal to the new site, legislation by the Trustees has been almost wholly of a routine character. The departments of instruction, also, have been comparatively free from demands upon their time growing out of questions affecting the policy of the institution. The result has been a year of uninterrupted and effective work, which is reported upon by many of the instructors as the best year they have had. Without doubt, the morale both of the instructors and of the students has been fine. Earnestness and efficiency have characterized the work of both.

During the year, for the first time since 1892, the Trustees have revised their own By-Laws and the

Statutes governing the University. This was for the purpose of incorporating into the body of the Statutes the results of our experience during this period of rapid expansion. It is significant that, apart from details, no change was found to be desirable in any part of the organization that has been built up during the last few years.

The University Council, in its relation to the various faculties and to the University as a whole, has become a valuable and efficient body. The permanent questions with which it has had to deal have been so far settled that it has been thought wise to provide hereafter for quarterly instead of monthly meetings of the Council. Special meetings, of course, can still be held as often as may be necessary. This action, unimportant as it is from most points of view, shows that, in the opinion of the educators, the University is at the end of the transition period that began in 1890 and that has been marked by so many changes.

The several Faculties are working together harmoniously, and are manifesting a constantly increasing ability to develop both the interests committed to them as individual faculties and the interests that depend for their prosperity upon co-operative action. The tendency to co-operate is showing itself, to equal advantage, in the new relations that are springing up between kindred departments. The Departments of Greek and Latin, for example, present this year a combined circular relating to the Division, so-called, of Classical Philology. This circular not only displays the courses offered by both of the departments, but it reveals the purpose of the two departments to

work together at all points for the benefit of the student of the classics. The courses in the two departments are laid down after consultation together, and all of the facilities of one department are brought into play to throw light upon the work of the other. In the new library, the seminar rooms of Greek and Latin are side by side, and can be thrown into one by moving a sliding door. Close to these rooms is the Avery Architectural Library, which abounds in material illustrating classical archæology and epigraphy. Besides the Division of Classical Philology, the Departments of Rhetoric, English, and Literature have united to form the Division of English and Literature; the Departments of the Semitic and the Indo-Iranian Languages the Division of Oriental Languages; and the Departments of Philosophy and Education and of Psychology the Division of Philosophy, Psychology, and Education. It thus appears that the sub-division into faculties and into departments, which has been found desirable for the purpose of securing efficient oversight of details, is not unfriendly to the principle of co-operation on any scale that may be demanded by the object to be attained. There is nothing more characteristic of Columbia University at the present day than this active spirit of co-operation. It overruns the lines of departments and of faculties without in any way embarrassing the individual work of either. It multiplies by numberless combinations the opportunities offered to the students, and it is building up a university spirit that is strong, pervasive, and inspiring.

Some incidental reorganization has been effected during the year in anticipation of our removal to the

new site in the autumn. The office of Bursar has been created from and after July 1, 1897. This officer is to be the representative of the Treasurer at the new site, in his relation to the students and officers of the University. He will also be the recording officer of the University. Such a concentration of functions has not been possible at 49th Street on account of the physical conditions prevailing there. At the new site, ample offices can be afforded for the purpose, and it is expected that this concentration of functions will tend at once to efficiency, to economy, and to the convenience of all concerned.

In view of the fact that, with our removal from the present site, a new epoch in the history of the University begins, Prof. Chandler tendered his resignation, to take effect July 1, 1897, from the Faculty of the College of Physicians and Surgeons, a position which he had held for more than a quarter of a century, in order to concentrate his attention upon his work at the new site as Professor of Chemistry. Similarly, Prof. Egleston, the founder of the School of Mines, whose growing infirmities made him feel unequal to the new and enlarged demands likely to be made upon him, tendered his resignation, to take effect on the same date, of the chair of Mineralogy and Metallurgy, which chair he had held from the foundation of the School in 1864. These resignations necessitated a certain reorganization of the departments concerned.

In the College of Physicians and Surgeons, the department presided over by Dr. Chandler has been known as the Department of Chemistry and Physics. It has given instruction in general chemistry, in

physiological chemistry, and in physics. Latterly, the laboratory instruction in physics has been given by the Department of Physics at 49th Street. As long as the Medical School finds itself obliged to accept students who have had no adequate training in general chemistry and in physics, it is necessary to provide for such students instruction in these subjects. On the other hand, the Medical Faculty believe that general chemistry and physics do not properly belong in the medical curriculum. The Faculty desire, however, to emphasize more and more the importance to the medical student of physiological chemistry. Accordingly, the name of this department in the College of Physicians and Surgeons has been changed to the Department of Physiological Chemistry, and arrangements have been made to develop that subject in the College of Physicians and Surgeons, more and more thoroughly as opportunity permits, for the benefit both of the medical students and of the University at large. In the meanwhile, such instruction as must still be given to medical students in general chemistry and in physics, will be given by the Departments of Chemistry and of Physics respectively. The laboratory work in general chemistry will be conducted at the Medical School in order to avail of the laboratory equipment there. All the lectures in general chemistry and all the work in physics, both in the laboratory and by lecture, will be given at the new site.

As an incidental result of these changes, the course in the School of Chemistry leading to the degree of Bachelor of Science has been greatly strengthened and developed. The single course in chemistry hith-

erto given has been expanded into the three courses of Analytical Chemistry, Industrial Chemistry, and Organic Chemistry. The first two years of all of these courses are substantially identical ; but during the last two years, the subject is developed more fully in one direction or another, as the case may be. Such a development of our work in chemistry is made possible only by reason of the greater facilities afforded in the spacious laboratories of Havemeyer Hall. It will be apparent to the donors, therefore, that their generous gift begins immediately to fulfil its mission. It is due to Dr. Chandler to say, that, at considerable cost to himself, he has cheerfully concentrated his attention upon the effort to make Havemeyer Hall as broadly beneficent as possible in its relation to the teaching of chemistry and the training of chemists.

The retirement of Dr. Egleston has led to the division of the Department of Mineralogy and Metallurgy, over which he presided, into the two Departments of Mineralogy and of Metallurgy. Prof. Moses, who has been Adjunct Professor of Mineralogy under Prof. Egleston, becomes the head of the Department of Mineralogy on the 1st of July, 1897, and Mr. Henry M. Howe, a graduate of Harvard College and of the Massachusetts Institute of Technology, has been appointed Professor of Metallurgy from the same date. The linking together of these two departments in the original organization of the School of Mines was, so to speak, an accidental result of Prof. Egleston's strong personal interest in mineralogy. The absence of natural connection between the two subjects is forcibly illustrated by the circum-

stance that at the new site mineralogy takes its place in Schermerhorn Hall as a branch of natural science, while metallurgy, with assaying, takes its place in the basement of Havemeyer Hall on the other side of the grounds. In the early days of the School of Mines, however, a wide field had to be covered by very few men ; and, in the distribution of the subjects to be treated, the capacities and tastes of the professors concerned naturally were consulted quite as much as the affinity between subjects.

From still another point of view, the division of the department into two is broadly significant. Dr. Egleston belongs to the class of scientific men who were trained a generation ago, as distinguished from the type that is produced to-day. The scientific man of the earlier epoch was more roundly trained than his successor ; or, if you please, the state of scientific knowledge at that time was such that a man could be something of an authority over a much larger field than is the case now. According to the modern view, indeed, the Department of Metallurgy alone can hardly be conducted now as it should be by any one man. There is no greater authority in the country than Prof. Howe on the metallurgy of iron and steel ; but he does not pretend to be an authority, in the same sense, on the metallurgy of the precious metals. Fortunately, Mr. Joseph Struthers, the tutor in metallurgy, is well equipped upon that side. Mr. William B. Devereux, a graduate of the School of Mines, whose success as a metallurgist in the West entitles his opinion on this subject to great weight, told me that, after coming in contact with Mr. Struthers pretty closely for several weeks, he knew of no

one in the country better equipped than he for the presentation to students of this branch of the subject.

The retirement of Dr. Egleston, as an emeritus professor, from the active teaching force of the School of Mines marks an epoch in the history of the School that ought not to pass without a word of notice. It is matter of history that the idea of such a school in this country, as the School of Mines, originated with Dr. Egleston ; and he also took the initiative that led to the creation of the School by the Trustees of Columbia College. Like most things that have become important, the School of Mines began in a small way, and justified its right to be by successfully overcoming obstacles innumerable. During the entire period of its history, Dr. Egleston has watched over it as a father watches his child. He has lived to see it develop from a small school devoted exclusively to instruction in mining and in metallurgy, into a series of schools covering a broad field of instruction in engineering of every kind, in analytical and applied chemistry, and in architecture. Also he has seen evolved out of it a School of Pure Science, that, in its way, is contributing to the usefulness and the reputation of the University hardly less than the School of Mines itself. During the whole of this long interval, the School of Mines has maintained its place in the forefront of the scientific schools of the country, and it is pleasant to believe that its reputation was never higher than it is to-day. Dr. Egleston is to be congratulated that, from the fruitful seed that he planted in 1864, he has been permitted to witness so important an outcome, of which he is able to say, "all of which I saw

and a great part of which I was." It is reasonably to be hoped that, relieved from the pressure of increasing duties at the University, Dr. Egleston may enjoy still, for many years, the pleasure of watching the further prosperous development of the schools he has done so much to establish.

Among the changes incident to the termination of the epoch that closes with the occupation of our present site, is the retirement from the teaching force of the School of Law of Dr. John Ordronaux as Professor of Medical Jurisprudence. Almost from the foundation of the School in 1858, Dr. Ordronaux has given optional lectures upon this subject to the students of the School of Law. The course has never been largely attended, because it came into competition with work which to the students of the School seemed more important. Nevertheless, Dr. Ordronaux's punctual and faithful attendance to the duty devolved upon him calls for a word of hearty commendation ; while it remains a matter of genuine regret, from the personal point of view, that it has been deemed necessary to terminate official relations that have been so mutually agreeable.

Our contemplated removal has made it seem timely, also, to take advantage of the gracious action of the Trustees a year or two ago, in voting to establish, in recognition of the gift of the Library, a chair in history to be known as the Seth Low Chair. This step appeared to be the more desirable because the new College curriculum, adopted a year ago, calls for much more instruction in history than has hitherto been given. Up to this time, the University has had no separate Department of History. It has had Adjunct

Professors of history in the department of Prof. Burgess, whose title was Professor of History, Political Science, and Constitutional Law; but history, as a separate subject, has lacked the independent departmental organization which its extent and importance certainly justify if they do not require. Happily, Prof. Burgess sympathized with these views, so that the reorganization desired was brought about with his cordial co-operation. The title of Prof. Burgess has been changed from Professor of History, Political Science, and Constitutional Law to Professor of Political Science and Constitutional Law. The Seth Low Professorship of History has been created, and there has been established a Department of History, the head of which is to be the occupant, for the time being, of the Seth Low Chair of History. The titles of Prof. Dunning and Prof. Osgood have been changed from Adjunct Professor of History to Professor of History. Prof. William Milligan Sloane, of Princeton University, a graduate of the Class of '68 of Columbia College, has been called to the Seth Low Chair of History, and, therefore, to be the first head of the new department. Prof. Sloane's admirable equipment for the position is so well understood that the appointment calls for no extended comment here. The President, however, cannot forbear recording his own personal gratification that the chair of history that bears his name should be filled for the first time by a distinguished alumnus of the College with whom his friendship began during their college days. It is, also, a pleasure to repeat the expression used by Prof. Burgess in his report as Dean of the Faculty of Political Science. "The Faculty now feel," he says, "that

they are fully manned and equipped in the Department of History and are prepared to compete with the greatest universities of the world in historical study and research." The Department of History begins its separate career with the following force: Prof. Sloane, Professors Herbert L. Osgood, William A. Dunning, and James H. Robinson, Dr. Harry A. Cushing, Tutor, Dr. William R. Shepherd and Mr. George Louis Beer, Lecturers. When it is recalled that Prof. Burgess, Prof. Mayo-Smith, and Prof. Munroe Smith, of the same Faculty, are also trained historians, the basis for the observation of the Dean is apparent.

When Columbia College, in 1857, moved to 49th Street from the historical site which it had occupied for one hundred years, near the City Hall, the Corporation conducted no educational work but that of the College proper. The College numbered

During its last year down-town :	During its first year at 49th Street :
Seniors.....58	Seniors.....49
Juniors.....45	Juniors.....39
Sophomores.....39	Sophomores.....51
Freshmen.....37	Freshmen.....46
Total..... 179	Total..... 185

Its Faculty consisted of the following men :

CHARLES KING, LL.D.,  
President.

REV. JOHN MCVICKAR, S.T.D.,  
Professor of Intellectual and Moral Philosophy, of Political Economy,  
and of Rhetoric and the Belles-Lettres.

CHARLES ANTHON, LL.D.,  
Jay Professor of the Greek and Latin Languages and Literature, and  
Rector of the Grammar-School.

JAMES RENWICK, LL.D.,  
Emeritus Professor of Natural and Experimental Philosophy and  
Chemistry.

- REV. CHARLES W. HACKLEY, S.T.D.,  
Professor of Mathematics and Astronomy.
- HENRY DRISLER, A.M.,  
Adjunct Professor of the Greek and Latin Languages.
- REV. H. I. SCHMIDT, S.T.D.,  
Gebhard Professor of the German Languages and Literature.
- RICHARD McCULLOH, A.M.,  
Professor of Physics and Chemistry.
- REV. SAMUEL H. TURNER, D.D.,  
Professor of the Hebrew Language.
- MARIANO VELASQ DE LA CADENA, LL.B.,  
Professor of the Spanish Language and Literature.
- E. FELIX FORESTI, LL.B.,  
Professor of the Italian Language and Literature.
- FELIX G. BERTEAU, LL.B.,  
Professor of the French Language and Literature.
- JOHN W. S. HOWS,  
Professor of Elocution.
- WILLIAM BETTS, LL.D.,  
Professor of Law.

Its library numbered 20,000 volumes. In 1857, it conferred 27 degrees of Bachelor of Arts.

At the same time, this small and apparently insignificant College had behind it a historic past that had enriched it with great traditions. Especially had it been a part of its genius from the beginning to endeavor to enlarge its scope into the broader field of university instruction. It had created, in 1767, the first medical faculty in the State of New York and had maintained it for forty years. It had established, in 1793, the first professorship in law ever established within the State of New York, and at intervals it had given instruction in the law for half a century. It had attempted at an earlier epoch to broaden its instruction in other ways; but, at the precise moment when the 49th Street site was first occupied, circum-

stances had limited the immediate activities of the Trustees to the conduct of the College alone. The Trustees of 1857, however, were distinctly animated by the inspiring traditions of the earlier time; and they made an earnest endeavor to mark the removal of the College to the 49th Street site by a significant enlargement of its scope. They adopted a statute which provided, in brief: first, for a university course of study to be conducted in three schools—namely, a School of Letters, a School of Science, and a School of Jurisprudence; second, for an extended and liberal undergraduate course involving three elective courses in the Senior year, respectively adapted to fit students to enter upon the several university courses; third, for prize scholarships; and fourth, for fellowships with and without stipends. The perfect fruition of this plan was interfered with by the outbreak of the Civil War. In many of its details, also, it proved to be in advance of the times. Nevertheless, our present School of Law directly owes its origin to this endeavor; and the various schools and faculties that conduct to-day, in the far more systematic fashion that is characteristic of the times, the work that was outlined then, are, in a very true sense, only the realization in more complete form of the purpose then proclaimed.

To-day, as we are leaving the 49th Street site, the same corporation comprehends in its activities not only the historic College, grown half as large again; but the College is surrounded now by a series of professional schools and of non-professional schools for advanced investigation and research. These consist of a School of Law, a School of Medicine, a School

of Mines, a School of Chemistry, a School of Engineering, a School of Architecture, a School of Philosophy, a School of Political Science, and a School of Pure Science. It is a noticeable feature of this development that the College and each professional school is supplemented by one or more non-professional faculties. These non-professional faculties tend to increase the scientific spirit in the College and in the professional schools themselves, and at the same time they offer to the students of the College the opportunity, after graduation, for investigation and research, and to the students of the professional schools an opportunity to acquire, in connection with their professional training, some knowledge of the scientific and philosophic basis of the profession they propose to practise. Thus the School of Law and the School of Political Science, together, make such a school of jurisprudence as the Trustees of Columbia College had in mind when they passed the statute in 1857, to which I have referred. Only, in the earlier day, all of the instruction in law was given by one man, and all of the instruction in political science was given by another. It is true that the one professor of law was Prof. Theodore W. Dwight, and the one professor of political science was Prof. Francis Lieber, both of them men of pre-eminent ability. Now the Faculty of the School of Law consists of five professors, with whom are associated two lecturers. The Faculty of the School of Political Science consists of twelve professors, with whom are associated six officers of other grades. Of these twelve professors of political science, four give instruction in public law and political science, four in political economy and social science, and four in his-

tory. It thus appears that, after forty years, seventeen professors and eight officers of other grades are at work in this field that in 1857 was covered, so far as it was covered at all, by two professors.

The School of Philosophy and the School of Pure Science, on the other hand, except as the plans of to-day are more complete than in 1857, are almost identically the Schools of Letters and of Science which were projected in that year. The School of Philosophy, as well as the Schools of Political Science and of Pure Science, supplement the teachings of the College, and offer, respectively, the privileges of research in all departments of philosophy and letters ; of public law, history, and political economy ; and of natural and exact science. It is interesting to point out that the Department of Intellectual and Moral Philosophy, of Political Economy, and of Rhetoric and the Belles-Lettres, presided over, single-handed, by Dr. McVickar in 1857, is now represented by Prof. Butler, Prof. Cattell, Prof. Hyslop, Prof. Mayo-Smith, Prof. Seligman, Prof. Giddings, Prof. Clark, Prof. Price, Prof. Woodberry, Prof. Brander Matthews, and Prof. George R. Carpenter, with whom are permanently associated twelve other officers of different grades ; while the courses in psychology are further strengthened by lectures given by Prof. Starr of the Medical Faculty, and by various instructors from the Teachers' College.

The School of Pure Science also supplements the professional work of the College of Physicians and Surgeons and of the Schools of Applied Science. The College of Physicians and Surgeons, which entered into a nominal alliance with Columbia College in 1860, in 1892 became an integral part of our educational sys-

tem. In 1860, the medical education obtainable there, as in all the other medical schools of the country, was very meagre and was almost devoid of scientific basis. At the present time, the College of Physicians and Surgeons is conducted in all its parts upon a scientific basis, while the chairs of Anatomy, Physiology, and Pathology are represented in the Faculty of Pure Science. This connection of the Faculty of the Medical School with the Faculty of Pure Science serves to strengthen the interest in research in the College of Physicians and Surgeons along all the lines of medical science. The Faculty of Pure Science performs the same function also for the Schools of Applied Science. It tends constantly to persuade instructor and student alike into the fields of investigation and research, where progress in the scientific professions is largely made.

I think the organization of the University in these particulars is admirable; because it frankly recognizes the difference in aim involved in the study of a profession simply for the purpose of practising it, and in the study of the science upon which the profession is based. Both of these aims the University deems worthy, and it leaves neither of them to chance; it unites them both in the student whenever it can. The professional work is committed to the care of faculties whose specific object it is to fit the students for the practice of their profession. On the other hand, all of this professional work is done in an atmosphere surcharged with the scientific desire to discover the philosophic basis of each profession and to carry its achievements always into new fields; and this desire, in its turn, is kept strong by the

activities of other faculties whose especial aim it is to do these things.

As compared, therefore, with forty years ago, when Columbia College moved to the new site, "the little one has become a thousand," and the simple College has become a highly organized University. Many people have contributed their best to the accomplishment of this result; but to no one man is more credit due for the results achieved than to my honored predecessor, the Rev. Dr. F. A. P. Barnard. For twenty-five years out of the forty, Dr. Barnard presided over the destinies of Columbia with sagacity and foresight, and with complete self-devotion, and it has been the good fortune of his successor that he has entered upon the fruit of Dr. Barnard's labors.

It may not be uninteresting to present a statement showing the attendance upon the University at the present time as compared with the attendance in 1889-90, the year of my installation as president. Making first the comparison which is most exact, because it disregards all differences of organization, the figures are as follows:

	1890	1897	Gain
Undergraduates in the College.....	269	307	38
Graduate students holding degrees.....	515	672	157
Non-graduate professional students.....	877	942	65
Total.....	1661	1921	260

Of the total gain of 260, no less than 157 are graduate students holding the first degree. In this connection, it is interesting to recall a sentence used in my first annual report, for 1890. In that report I said: "Meanwhile, for us in New York, the way to make our College great is to make our University

great. By common consent, we have advantages second to none in the country for university work proper. The College is certain to feel by reflex action the advantages of the University that is famous." In illustration of the truth of this proposition, it is worth while to point out that the class entering the College in October last year was the largest class ever matriculated up to that time ; but the class entering in October, 1897, is likely to be still larger ; and, judging from the increase in the number of those taking the preliminary examination this year in June, the class entering in October, 1898, will be larger still. In other words, the College has fairly begun to feel the advantage to itself of the great development that has taken place since 1890 in the university privileges at Columbia.

But these figures, interesting as they are, do not fully show the strength of our present situation as compared with that which existed in 1890. In 1890, the School of Law numbered 456, divided between two classes, the entering class of that day being 251. At the present time, the School of Law numbers 357, divided between three classes, the entering class of the present year numbering 189. In 1890, however, the instruction in the Law School was duplicated in the morning and in the afternoon. The attendance upon lectures demanded of the students amounted to seven hours a week. Those who attended the morning sessions of the Law School were in offices in the afternoon, and those who attended the afternoon sessions of the Law School were in offices in the morning. At the present time, the School of Law is upon a three-year basis, and fourteen hours of at-

tendance upon lectures per week is required of each student, in place of seven hours. The courses are not duplicated in the morning and in the afternoon and none of the students of the School are in offices at the same time. The percentage of graduate students in the School has risen from 46% to 59%. In other words, while in this particular School there has been a falling off of nearly 100 in the number of students, the School itself has been placed upon a basis of scholarship so much higher as to make the comparison by numbers alone misleading. It is now truly a University School of Law.

Again, in the College of Physicians and Surgeons, the number of students in 1890 was 619, and in 1897 it is 638; but in 1890 there were three full classes pursuing a three-year curriculum. In 1897, there are still only three classes, but they are pursuing a four-year curriculum. Next year, when there will be four full classes, the membership of the Medical School is likely to exceed 800. In other words, the membership of the University, which this year is 1920, disregarding Barnard College, next year, without any other increase, is likely to be more than 2200, by reason of the filling out of the full number of classes in the Medical School.

The growth of the School of Mines in the seven years' interval is certainly satisfactory, when the space at command is considered. That School in 1890 numbered 231. This year the School of Mines and its associate Schools of Applied Science number 399. The non-professional faculties have increased their primary enrollment from 86 to 220; but even these figures represent very inadequately the increase of at-

tendance upon the Faculties of Philosophy, Political Science, and Pure Science. In this direction, also, as well as in all the professional schools, the work demanded of the students has been thoroughly reorganized and placed upon a higher basis. The satisfactory results appear in many ways. One of the most significant is seen in the constantly increasing number of our graduate students who obtain important positions as instructors, both in colleges and in schools. The outreach of the University has broadened as the character of its work has been improved and the number of its students has increased.

In 1890, the old Collegiate Course for Women still existed and numbered ten students. This course has been supplanted by Barnard College, in which, during 1897, there were

Graduate students.....	49
Seniors .....	21
Juniors .....	22
Sophomores.....	21
Freshmen .....	21
Specials.....	70

Total.....	204
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In other words, during the seven years since 1890, notwithstanding the reorganization of the University in all its parts and the constant increase of standard, there has been a growth which, if not large, is certainly encouraging. With the ending of this period of transition in the internal organization of the University, and with its removal to the new site, it is safe to assume that a period of much more rapid growth is at hand.

The increase in the Educational Staff during the same interval is shown by the following table :

	1890	1897
Professors.....	32	60
Adjunct Professors.....	10	15
Assistant Professors.....	2	—
Clinical Professors and Lecturers.....	11	14
Demonstrators.....	1	3
Assistant Demonstrators.....	2	11
Instructors.....	18	36
Tutors.....	5	29
Assistants.....	29	34
Curators.....	2	3
Lecturers.....	6	15
Chiefs of Clinics.....	10	5
Clinical Assistants.....	47	64
Examiner.....	1	—
Officers of Instruction..	176	289
Emeritus Officers.....	4	9
	180	298

The number of courses offered in the College and in the non-professional schools, so far as they existed in 1890, as compared with the present year, is as follows :

	1890	1897
	College and Political Science	College, Po- litical Science, Philosophy, Pure Science
Anthropology.....	—	5
Astronomy.....	4	6
Bacteriology.....	—	2
Botany.....	1	12
Chemistry.....	8	25
Economics and Social Science.....	14	20
English Language and Literature.....	6	8
Geology.....	3	6
Germanic Languages and Literatures.....	12	15
Greek.....	13	24
History and Political Philosophy.....	14	23
Indo-Iranian Languages.....	7	13
Language, Science of.....	—	1
Latin.....	16	14
Literature.....	—	7
Mathematics.....	8	15
Mechanics.....	1	18
Mineralogy.....	3	10
Music.....	—	5
Navigation.....	1	—
Philosophy, Psychology, and Education ..	15	33

	1890	1897
	College and Political Science	College, Po- litical Science, Philosophy, Pure Science
Physics.....	4	30
Physiology.....	—	5
Public Law and Comparative Jurisprudence	9	16
Rhetoric and English Composition.....	—	8
Romance Languages.....	23	31
Semitic Languages.....	15	16
Zoölogy... ..	—	14
	177	382

The number of volumes in the library in 1890 was 91,000, and in 1897, 235,000. The number of loans made, of books to be used at home, was, in 1890, 22,721; and in 1897, 67,975.

It thus appears that the development of the intellectual activity of the University in the seven years under review is not easily presented by any tables of statistics.

The additions to the estate of the Corporation, and the gifts received during the same interval, may be summarized as follows:

Library, including Avery Architec- tural Library.....	\$132,363 00	
For Salaries, Fellowships, and Prizes	25,525 00	
Miscellaneous .....	56,948 00	
Endowments .....	438,899 00	
College of Physicians and Surgeons, Real Estate, Buildings, and Funds at time of taking over.	1,652,850 00	
Vanderbilt Gift for Enlargement of P. & S. ....	350,000 00	
Enlargement of Maternity Hospital	325,000 00	
For Purchase of New Site.....	326,150 00	
Library .....	1,000,000 00	
Schermerhorn Hall.....	400,000 00	
Havemeyer Hall.....	450,000 00	
Gould Boat House.....	19,000 00	
		\$5,176,735 00
Fayerweather Legacy.....	\$293,291 00	
Beck Legacy.....	300,000 00	
Robert Center Fund.....	100,000 00	
		693,291 00
		\$5,870,026 00

It is to be borne in mind that all of the development of the last seven years has taken place without any addition to the buildings of the University, outside of the College of Physicians and Surgeons. It represents, in every direction, a greatly increased use of existing facilities. Nevertheless, it is equally certain that the capacity of the buildings at 49th Street has been fully reached, not to say that for a year or two they have been overtaxed. Apart from the disadvantages of the situation for purposes of oral instruction, by reason of its abutting on the railroad yard of the Grand Central Depot, the 49th Street site has been fairly outgrown. It is fortunate that the Trustees, foreseeing this condition of things, secured when they did the new site on Morningside Heights, to which the University is about to be removed. Whatever difficulties may attend this great undertaking before the outlay incurred has been fully met, this at least is certain, that the University has thereby secured, in the large outlook, an opportunity for expansion such as would have been entirely out of its reach except for this removal. In my view, not only is Columbia's past secure, but also, by reason of this courageous decision, it has secured a future full of the most brilliant possibilities. As I contemplate the situation that will exist after our removal to the new site, I can perceive but one factor, bearing upon our highest usefulness, that remains to be dealt with. In some way, it must be made possible for students to live as cheaply and comfortably while in attendance at Columbia as at other universities. This being done, there is no limit to the possibilities of Columbia's usefulness. Everything else is

here; the men, the means, the countless opportunities that the great city itself supplies. The cost of comfortable living in New York is the one obstacle that deters men from a distance. It cannot be doubted that every year will help to solve this part of the problem. Dormitories for the students, in which they can have decent accommodations, and enjoy the advantages of community life at a reasonable cost, are greatly needed. Experience will soon show the best form for such enterprises to take under the conditions prevailing in New York.

In November, 1896, the Trustees adopted the following resolution:

*Resolved*, That, in the opinion of the Trustees, it is desirable that upon the removal of the University to the new site, buildings to be used as residences for students should be erected on or near the University grounds, and that the Treasurer be authorized to receive gifts to be applied to the purchase of land or the erection of a building or buildings for such purpose.

It is not clear that the new site itself is large enough to permit the erection of dormitories upon it. On the other hand, I think there is no doubt that dormitories in the neighborhood of the University would greatly increase its usefulness and lead to its more rapid growth. I hope very much that in one way or another the friends of the University will begin to supply this need at an early day. Nothing is beyond the power of New York, and it cannot be doubted that, even under the difficult conditions prevailing here, the way will yet be found to meet this need on a large scale.

One of the most interesting events in academic

circles during the year under review was the celebration of the sesqui-centennial of the College of New Jersey, hereafter to be known officially as well as popularly by the name of Princeton University. The celebration, which lasted three days, was successfully carried through at every point. A unique and exceptionally interesting feature of the celebration was the delivery, by a number of distinguished foreigners, of lectures of high literary and scientific value upon many subjects. This feature of the occasion gave to it an academic quality that was most refreshing, so that the celebration became distinctly a source of inspiration to the scholarship of the country, as well as an occasion for congratulation to Princeton, based upon its noble past. It is a source of gratification that among those who were honored by Princeton at this time with honorary degrees, were Prof. John B. Clark, one of our Professors of Political Economy, Prof. Edward A. MacDowell, our Professor of Music, and the President of the University.

#### THE CURRENT WORK OF THE YEAR

The Committee on Aid for Students report that while they were not able to aid as many students to obtain an opportunity to add to their earnings in 1896-97 as during the previous year, the positions that were obtained were more remunerative. It appears that by their aid 51 students were enabled to earn about \$3750; or, upon the average, about one-half of their tuition fee. The aim of the Committee is to bring students needing to earn something in order to be able to pay their own way, into contact

with those who have work to be done that students are capable of doing. This form of helping students is, in my judgment, one of the best that can be devised. By the co-operation of the people of the city, it can be greatly extended, and, as the opportunity becomes known, I think much more can be accomplished in this way.

#### ATTENDANCE

The number of students in attendance upon the University is given below for each of the last five years.

<u>1892-3</u>	<u>1893-4</u>	<u>1894-5</u>	<u>1895-6</u>	<u>1896-7</u>
1641	1805	1943	1871	1921

Since 1894-5, the attendance upon the College of Physicians and Surgeons has fallen off, as an incident of the installation of the four-year course in Medicine, from 799 to 638. Next year, when there are four classes in the College of Physicians and Surgeons instead of three, the membership of the Medical School is likely to exceed the high total reached in 1894-5. In the meanwhile, it would appear that the University has almost made good in other directions the loss of these 161 medical students.

All of these figures disregard the students in Barnard College. Inasmuch as Barnard College, educationally, is a part of our university system, it is proper to include the students of Barnard College, 204 in number, in the membership of the University.

The geographical distribution of the students in the University is set forth in the following table :

	1894	1895	1896	1897
New York City .....	835	909	863	880
Brooklyn .....	170	175	177	193
	<hr/>	<hr/>	<hr/>	<hr/>
Local.....	1005	1084	1040	1073
New England States.....	100	117	103	111
Middle States.....	481	513	502	499
States north of Ohio River and east of Mississippi River....	69	57	65	74
States south of Ohio River and east of Mississippi River....	55	56	43	47
States west of Mississippi River and east of Rockies.....	47	60	64	64
States west of Rockies and on Pacific Coast.....	26	24	22	27
	<hr/>	<hr/>	<hr/>	<hr/>
Foreign countries .....	1783	1911	1839	1895
	22	32	32	26
	<hr/>	<hr/>	<hr/>	<hr/>
	1805	1943	1871	1921

## THE LIBRARY

The Librarian reports a somewhat smaller increase than usual in the number of volumes in the library. This is due to the circumstance that no special efforts were made to obtain gifts of money for the purchase of books, owing to the fact that we were expecting to remove the library to the new site at the end of the academic year. It appeared to be good policy to restrict somewhat the inflow of books during this year, for the purpose of facilitating the work of removal. By this course, the clerical force of the library has had more time at its command for the cataloguing of the books actually in the library, and generally for preparing the library for removal. Still further to facilitate the actual work of removing the books from our present building to the library upon the new site, the Librarian was authorized to close the library from

and after June 12th. The library was open, therefore, for the delivery of books during the year under review, for 291 days only as against 307 days in a normal year. Notwithstanding this circumstance, it is exceedingly gratifying to observe the very substantial increase in the number of loans of books to be read at home. I know of no better evidence of the intellectual activity of the University than the demand thus made for books. The record of loans for a number of years past is as follows :

1886-87	1890-91	1891-92	1892-93	1893-94	1894-95	1895-96	1896-97
13,373	22,721	26,632	28,184	42,015	53,471	59,756	67,975

The record of additions to the library during the last five years has been as follows :

1892-93	1893-94	1894-95	1895-96	1896-97
19,797	15,161	24,839	20,584	11,928

It therefore appears that the growth of the library this year has been substantial, although it falls somewhat below the high average of the previous years.

The following gifts have been received for the purchase of books during the year :

Samuel D. Babcock.....	\$ 500 00
S. P. Avery.....	2,840 25
A. Friend, for books on American History..	900 00
John D. Crimmins.....	1,000 00
G. K. Sheridan, for books in Sanskrit.....	50 00

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\$5,290 25

In addition to these gifts, there has been received from two sources, to carry on certain work within the library, the sum of...

\$1,500 00

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\$6,790 25

It thus appears that without special effort the sum received for the benefit of the library during the year has not been insignificant. Mr. Avery continues to

build up the Avery Architectural Library, year by year. The gift from Mr. John D. Crimmins was especially welcome, as it secured for the library a valuable copy of Mansi's Collection of the Councils of the Church.

Dr. Drisler has made further gifts from his private collection ; and Mr. Charles H. Senff has presented about 400 volumes, "chiefly illustrated works in natural history, art, and archæology, many of the books being of great value and importance."

Dr. J. Ackerman Coles, of the College Class of '64 and of the Class of '68 in the College of Physicians and Surgeons, has presented to the University during the year, several beautiful busts in bronze and marble. The busts in bronze are copies of a bust of Zeus found at Olympia and ascribed to Phidias ; of a bust of Plato found at Herculaneum ; and of the Hermes of Praxiteles found in the Temple of Hera, Olympia. The marble bust is a beautiful copy of the Parthenon Minerva in heroic size. This is to be placed in the centre of the vestibule of the new library. The busts of Zeus and of Plato will also be placed in the library ; and, by request of Dr. Coles, the bust of Hermes will be placed in the gymnasium. All of the busts are provided with pedestals. It is singularly pleasing to acknowledge these generous gifts from Dr. Coles, who is himself an alumnus of Alma Mater, for they will add much to the beauty of the new library and of the gymnasium.

#### THE COLLEGE

I am glad to be able to report that my anticipations of last year in regard to the growth of the College

have been borne out. The total number of students in attendance during the year was 323 as against 272 during the year previous. The total number of applicants for admission examined in June, 1897, was 230 as against 206 the year before. It is significant that of this number 105 took the preliminary examination as against 83 the year before. It seems to be clear, therefore, that the College has entered upon a period of steady growth.

As a matter of interest, I continue the table showing year by year the number of Columbia Bachelors of Arts who remain students of the University after graduation from the College.

1893.....	43
1894.....	55
1895.....	68
1896.....	74
1897.....	80

For purposes of comparison, I also append the usual statistics contained in previous reports, although with the adoption of the new curriculum that goes into effect in October, some of these tables will have little further significance.

Chemistry was taken by the sophomores as follows :

			1894-95	1895-96	1896-97
			57 in class	59 in class	62 in class
Chemistry in place of Greek,			15	19	13
“ “ Latin,			15	3	3
“ “ French,			2	7	4
“ “ German,			2	2	3

The Seniors studied under the following faculties :

	1894-95 57 in class	1895-96 54 in class	1896-97 53 in class
Law .....	22	12	10
Medicine .....	5	6	3
Mines .....	5	7	4
Political Science .....	18	37	52
Philosophy .....	41	44	53
Pure Science .....	21	24	24

The Seniors who took partial courses in law and medicine, apparently not by way of preparation for the practice of the profession, are indicated in the following table :

	1895		1896		1897	
	Law	Medicine	Law	Medicine	Law	Medicine
Intending to practise .....	19	3	10	4	6	1
Not intending to practise ..	3	2	2	0	4	2
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	22	5	12	4	10	3

The tendency as to concentration is shown by the following table :

	1895	1896	1897
Number working entirely under one faculty	8	15	12
Number working under two faculties .....	38	21	24
Number working under three or more faculties .....	11	15	17

Admissions on certificate from other colleges :

	1894-95	1895-96	1896-97
To Freshman class .....	1	3	3
To Sophomore " .....	1	7	3
To Junior " .....	1	4	3
To Senior " .....	5	6	2
	<hr/>	<hr/>	<hr/>
	8	20	11

Of the students admitted to the Senior class, one elected the first-year course in the Law School.

It is noticeable that, whereas a year ago, outside of the States of New York and New Jersey, only sixteen students came to the College from a distance, during the year under review thirty-four such students entered the College from no fewer than fifteen different States and three foreign countries.

The Dean, in his report, expresses the hope, in which I heartily concur, that some alumnus of the College will speedily erect upon the new site a building that shall be the permanent home of the College. For the time being, the building hitherto known as the South Building, which has been occupied by the boat crews for two or three years as their headquarters, will be the headquarters of the Dean of the College and of the Departments of Mathematics and Greek and Latin, and will be known as College Hall. It is, however, a temporary building and is wholly inadequate to serve as the permanent headquarters of the College. All of the new buildings have been erected for scientific purposes, because money used in changing old buildings to scientific uses is practically thrown away. On the other hand, the literary and mathematical departments can carry on their work in any building that affords them shelter. But all of the literary departments, so far as they deal with advanced work, have headquarters in the Library Building. It is evident, therefore, that their special needs have not been neglected.

#### THE SCHOOL OF LAW

I am glad to be able to report again a year of gratifying growth in the School of Law. The total number of students in the School was 357 as against 323

a year ago. By a change in the requirements of admission which requires special students to pass the same examinations as students who are candidates for a degree, the body of special students, which a year ago numbered forty, was reduced this year to three. In other words, despite the loss of thirty-seven special students, the School has made a net gain of thirty-four. It is especially gratifying to observe that the entering class was 183 in number, or 40 larger than the year before. I am glad, also, to be able to report that the percentage of students in the School who had received a college education before entering the School was 59% as against 52% in 1895-96. The examinations at the end of the year revealed a remarkably small percentage of failures. The following table gives the usual statistics in regard to the School.

	1893-94	1894-95	1895-96	1896-97
Men holding Columbia degrees	20	25	29	32
Men holding other degrees....	94	100	140	180
	<hr/> 114	<hr/> 125	<hr/> 169	<hr/> 212
Columbia College Seniors.....	20	23	10	6
	<hr/> 134	<hr/> 148	<hr/> 179	<hr/> 218
Percentage of the whole School	50%	51%	51%	61%
Total number in School.....	270	288	333	357

#### THE COLLEGE OF PHYSICIANS AND SURGEONS

The class that entered the College of Physicians and Surgeons during the year under review was once more larger than the year before, numbering 256 as against 241 a year ago. The total attendance upon

the school, however, is smaller than the year before, because all of the large classes that had entered for the old three-year curriculum have been graduated. Next year, as has been said, when there will again be a class for each year of the curriculum, the numbers in the school are likely to return to their old figure of 800, or thereabouts.

I am glad to be able to report that the practice of holding strict examinations at the end of each year has worked most happily. Of those who had obtained admission to the third-year class, I believe not one was so seriously conditioned at the end of the year as to be debarred from entering upon the work of the fourth year in good standing. The system cuts down the large entering class very importantly by its second year; but it is much fairer to the students who are incapable of doing good work that they should discover this at the beginning of their course of study rather than at the end of it; and it is also much fairer to those who are equipped and remain in the school, that they should not be hindered in their progress by the attempt to carry forward with them a large body of students who are inadequately prepared.

During the early part of the year, Dr. George L. Peabody, Professor of Materia Medica and Therapeutics, was obliged to be absent on leave, owing to ill health. His work was satisfactorily performed during his absence by Dr. Henry A. Griffin.

On the 14th of April, the new addition to the Sloane Maternity Hospital was thrown open for inspection. It is needless to say that all who saw it were delighted with the completeness of its arrange-

ments. The new addition is more than twice as large as the original hospital built just ten years before. The new part contains 72 beds as against 30 beds in the original hospital when it was opened. It is not easy to exaggerate the importance of this hospital in its relation to the teaching of obstetrics and to the training of nurses. Formerly, a course in obstetrics consisted of didactic lectures only, illustrated, as far as possible, with diagrams and models. Now, no student is allowed to graduate without having spent at least a week in the hospital, and he must give satisfactory evidence of possessing a fair degree of proficiency both in the science and art of obstetrics. In other words, by means of the opportunities afforded by the Sloane Maternity Hospital, the medical student of to-day, when he graduates from the College of Physicians and Surgeons, is better equipped for the practice of his profession, in this particular, than under other circumstances he might be at the end of several years.

For purposes of comparison I give the usual statistical tables.

As bearing upon the effect of the four-year curriculum upon the tendency of men to omit college and to go directly from the preparatory school to the medical school, the following table is presented, with reference to the entering classes of recent years :

	1894	1895	1896
Degrees signifying a liberal education.....	65	68	73
Degrees signifying a technical education....	5	3	3
	<hr/>	<hr/>	<hr/>
	70	71	76
Percentage in class, of liberal degrees.....	29%	28%	28%

	1893-94	1894-95	1895-96	1896-97
Men holding Columbia degrees	13	21	19	19
Men holding other degrees. . .	272	269	246	221
	<hr/> 285	<hr/> 290	<hr/> 265	<hr/> 240
Columbia College Seniors. . . .	6	4	6	3
	<hr/> 291	<hr/> 294	<hr/> 271	<hr/> 243
Percentage of the whole School	37%	37%	38%	38%
Total number in the School. . .	782	803	709	639

## THE SCHOOLS OF APPLIED SCIENCE

The attendance upon this group of schools, which includes the School of Mines, the School of Chemistry, the School of Engineering, and the School of Architecture, shows a slight gain for the year. The gain is pretty evenly distributed between the courses in civil engineering, electrical engineering, chemistry, and architecture.

	1893-94	1894-95	1895-96	1896-97
Men holding Columbia degrees	9	8	10	11
Men holding other degrees. . .	43	44	35	42
	<hr/> 52	<hr/> 52	<hr/> 45	<hr/> 53
Columbia College Seniors. . . .	4	4	5	11
	<hr/> 56	<hr/> 56	<hr/> 50	<hr/> 64
Percentage of the whole School.	14%	12½%	12%	13%
Total number in the School. . .	380	415	374	399

In December, Dr. Eggleston, the head of the Department of Mineralogy and Metallurgy for thirty-three years, resigned from active duty. After that date, the lectures in general metallurgy were delivered by Dr. Struthers. A special series of eight lectures on the metallurgy of steel were delivered during the

spring by Henry M. Howe, who has since been appointed Professor of Metallurgy in the University. One of the graduates of the School of Mines, Mr. W. B. Devereux, of the Class of '78, also gave a course of six lectures "On economical points in general metallurgical practice in the West." Reference has been made in another part of this report to the important reconstruction of the courses in chemistry made possible by the prospect of the larger laboratories that will be available in October in Havemeyer Hall. Suitable reference has also been made to the retirement of Dr. Eggleston and to the division of his department into the two departments of Mineralogy and of Metallurgy.

## SCHOOL OF POLITICAL SCIENCE

The Dean of the School of Political Science reports that "it is the unanimous verdict of the Faculty that the year has been the most successful year of their history in the development of high scholarship and of sincere work among the large number of students under their instruction."

	1893-94	1894-95	1895-96	1896-97
Men holding Columbia degrees.	19	26	38	31
Men holding other degrees. . . .	80	135	197	163
	<hr/> 99	<hr/> 171	<hr/> 235	<hr/> 194
Columbia College Seniors. . . .	40	35	37	34
	<hr/> 139	<hr/> 206	<hr/> 272	<hr/> 228
Percentage of the whole School.	61½%	62%	73%	62%
Total number in the School. .	226	332	346	366

Nothing of especial moment affecting this Faculty seems to call for comment in this report, except the

creation of the Department of History, to which allusion has already been made.

#### THE SCHOOL OF PHILOSOPHY

The School of Philosophy again shows a gratifying growth in the number of students availing of its privileges. It is interesting to note that every senior took at least one course under this faculty. This is especially interesting because it shows that no matter what attractions are offered to the students in other departments, the desire for knowledge in the domain of philosophy, philology, and letters is sufficiently strong to hold its own with our college students in competition with all other learning whatsoever.

	1893-94	1894-95	1895-96	1896-97
Men holding Columbia degrees..	28	38	25	38
Men holding other degrees.....	64	82	122	99
	<hr/> 92	<hr/> 120	<hr/> 147	<hr/> 137
Columbia College Seniors.....	55	51	44	53
	<hr/> 147	<hr/> 171	<hr/> 191	<hr/> 190
Percentage of the whole School	89%	90%	84%	72%
Total number in the School ...	165	190	227	263

The Dean's report contains a list of thirty students under the Faculty of Philosophy during the few years of its existence, who have recently obtained important teaching positions in colleges and schools. The list is presented with the remark that it is known to be somewhat incomplete. It illustrates, from the point of view of the Faculty of Philosophy, the statement that I made a year ago, speaking of a similar showing in connection with the Faculty of Political Science, that the maintenance of these opportunities for advanced work has carried the influ-

ence of Columbia into schools and colleges all over the country and has given the University a national relation to education that it has not enjoyed before for many years.

#### THE SCHOOL OF PURE SCIENCE

The students availing of the privileges of this School almost doubled in number during the last year. It is evident, therefore, that this newest of our schools is on a permanent footing and that it is successfully doing the work for which it was established.

	1893-94	1894-95	1895-96	1896-97
Men holding Columbia degrees.	11	13	8	22
Men holding other degrees....	20	30	24	61
	<hr/>	<hr/>	<hr/>	<hr/>
	31	43	32	83
Columbia College Seniors.....	29	14	24	24
	<hr/>	<hr/>	<hr/>	<hr/>
	60	57	56	107
Percentage of the whole School.	90%	86%	66%	72%
Total number in the School...	67	66	85	149

As an incident of the removal to the new site, Dr. Alexis A. Julien has been transferred from the Department of Chemistry to the Department of Geology, thus returning him to the field in which he first won his scientific reputation.

There is little doubt that, with the greater facilities that will be offered for scientific work at the new site, this School and the Schools of Applied Science will grow rapidly. All of the departments connected with the School of Pure Science have carried on work of investigation and research. Several of them during the summer did very creditable field work. The Department of Zoölogy, in particular, with the help of its friends, fitted out an expedition to Alaska. Its work

of collecting was successfully accomplished ; but, unfortunately, the steamship *Mexico*, on which the party were returning to Tacoma, was lost by striking on a sunken rock. Happily, the party escaped with their lives ; but they lost all their collections, their notes, their instruments, and their clothing. Regrettable as the result of the expedition has been, I cannot forbear recording my satisfaction that there are men connected with the University who are willing to encounter such hazards in the interest of science. The property loss is of little moment, so far as it affects the University, as compared with the great impulse which such a spirit gives to the University's work.

It is pleasant to be able to report that good progress has been made during the year in the establishment of the New York Botanical Garden and the New York Zoölogical Garden. Both of these gardens, when they are in working order, will be of advantage to our advanced students of biology. Happily, the disposition to co-operate with the University is strong in both.

I present herewith the usual summary of the most interesting statistics concerning the University as a whole. For further details and for particulars concerning the College and the various Schools, attention is asked to the appendix to this report and to the reports of the several Deans.

## EDUCATIONAL STAFF

	1895-96	1896-97
Professors.....	58	60
Adjunct Professors.....	13	15
Clinical Professors and Lecturers.....	15	14
Demonstrators.....	2	3
Assistant Demonstrators.....	11	11
	<hr/>	<hr/>
Carried forward.....	99	103

EDUCATIONAL STAFF (*Continued*).

	1895-96	1896-97
Brought forward.....	99	103
Instructors.....	25	36
Tutors .....	23	29
Assistants .....	30	34
Curators .....	3	3
Lecturers.....	16	15
Chiefs of Clinics.....	10	5
Clinical Assistants.....	62	64
	<hr/>	<hr/>
Officers of Instruction .....	268	289
Officers of Administration.....	13	13
Emeritus Officers.....	7	9
	<hr/>	<hr/>
	288	311

It is gratifying to notice that the teaching force of the University keeps pace with its growth in students.

## STUDENTS

	1895-96	1896-97	Percentage	
	1895-96	1896-97	1895-96	1896-97
Undergraduates.....	262	307	14.00	15.98
Graduates.....	659	672	35.22	34.96
Non-Graduates.....	950	942	50.78	49.06
	<hr/>	<hr/>	<hr/>	<hr/>
	1871	1921	100	100
Students from Barnard College :				
Seniors.....	18	21		
Graduate Students...	22	49		
	<hr/>	<hr/>		
	1911	1991		

It is noticeable that year by year the percentage of non-graduate students grows smaller. Two years ago, 53.60 per cent. of the total number of students in attendance were made up of this class. This year, the percentage of such students is reduced to 49.06 per cent. There has been an actual gain in the number of graduate students, but the greatest gain by percentage has been of undergraduates in the College. It is worth while to notice, also, that the number of graduate students from Barnard College is more than double the number of the year before.

## DEGREES CONFERRED IN 1896-97

Bachelor of Arts.....	57
"    " in Barnard College.....	21
Bachelor of Laws.....	72
Doctor of Medicine.....	40
Engineer of Mines.....	7
Civil Engineer.....	15
Electrical Engineer.....	27
Bachelor of Science.....	12
"    " Philosophy.....	1
Master of Arts.....	62
Doctor of Philosophy.....	16
Doctor of Laws (Honorary).....	1

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It will be observed that only 40 degrees in Medicine were conferred this year as against 234 the year before. This falling off is due to the installation of the four-year curriculum, there being this year no graduating class in the College of Physicians and Surgeons.

## SUMMARY BY SCHOOLS

	1895-96				1896-97			
	Holding a degree.	Not holding a degree.	Total.	Percentage of degrees.	Holding a degree.	Not holding a degree.	Total.	Percentage of degrees.
Law.....	171	152	323	53	210	147	357	59
Medicine.....	263	443	706	37	237	401	638	37
Applied Science....	49	322	371	13	52	347	399	13
Political Science....	55	9	64*	86	53	14	67*	79
Philosophy.....	91	17	108*	84	80	20	100*	80
Pure Science.....	29	7	36*	81	40	13	53*	75
	658	950	1608	41	672	942	1614	42
The College.....	1	262	263			307	307	
			1871				1921	
BARNARD COLLEGE :								
Seniors.....			18				21	
Graduate Students.			22				51	
Grand Total.....			1911				1993	

\* Total number receiving instruction :

	1895-96	1896-97
Political Science.....	346	366
Philosophy.....	227	263
Pure Science.....	85	149

In order to facilitate comparisons, I append the following information as to the degrees held by graduate students of 1896-97. From this table it appears that the number of degrees signifying a technical education is identical with the number of similar degrees a year ago. The degrees signifying a liberal or general education have increased from 648 to 702.

## DEGREES HELD BY STUDENTS

Bachelor of Arts.....	473
"    " Literature.....	6
"    " Philosophy.....	46
"    " Science.....	94
Doctor of Philosophy.....	4
Master of Arts.....	73
"    " Science.....	5
Testimonium Maturitatis.....	1
<hr/>	
Degrees signifying a liberal or general education.....	702
Bachelor of Divinity.....	5
"    " Engineering.....	1
"    " Laws.....	8
"    " Pedagogy.....	1
"    " Sacred Theology.....	1
Civil Engineer.....	4
Doctor of Divinity.....	1
"    " Medicine.....	32
Electrical Engineer.....	15
Graduate in Pharmacy.....	10
Master of Pharmacy.....	3
Mechanical Engineer.....	3
Metallurgical Engineer.....	1
Mining Engineer.....	4
<hr/>	
Degrees signifying a technical education.....	79
<hr/>	
Degrees.....	781
Students holding more than one degree.....	109
<hr/>	
Total students holding degrees.....	672

# NUMBER OF INSTITUTIONS REPRESENTED BY GRADUATE STUDENTS

	AMERICAN INSTITUTIONS	FOREIGN INSTITUTIONS
1893-94.....	118	18
1894-95.....	136	26
1895-96.....	136	23
1896-97.....	145	14

## INSTITUTIONS REPRESENTED BY FIVE GRADUATES OR MORE

	1895-96	1896-97
Adelbert College, O.....	5	5
Amherst College, Mass.....	13	17
Bates College, Me.....	5	4
Bowdoin College, Me.....	5	3
Brooklyn Polytechnic Institute.....	5	10
Brown University, R. I.....	13	9
College of the City of New York.....	68	70
College of Pharmacy, N. Y.....	14	9
Columbia University, N. Y.....	119	128
Cornell University, N. Y.....	8	4
Dartmouth College, N. H.....	2	5
Harvard University, Mass.....	45	60
Holy Cross College, Mass.....	6	6
Johns Hopkins University, Md.....	4	5
Lafayette College, Pa.....	8	6
Leland Stanford Junior University, Cal..	4	11
Manhattan College, N. Y.....	8	10
New York University.....	13	12
Princeton University, N. J.....	36	36
Rutgers College, N. J.....	9	11
St. Francis Xavier College, N. Y.....	10	10
St. John's College, N. Y.....	5	1
Syracuse University, N. Y.....	5	3
Trinity College, Conn.....	10	14
University of California.....	5	3
University of Michigan.....	7	9
University of Minnesota.....	9	5
University of Vermont.....	5	3
Union College, N. Y.....	2	5
Wesleyan University, Conn.....	4	7
Williams College, Mass.....	11	11
Yale University, Conn.....	81	86

## SUMMARY OF GIFTS

The gifts received during the year for current uses have been as follows :

For Books.....	\$5,290 25	
For Library services.....	1,500 00	
	<hr/>	\$6,790 25
From Barnard College for salaries.....	12,000 00	
For the Department of Mining.....	250 00	
For the Department of Architecture....	1,000 00	
For the Department of Mineralogy and Metallurgy.....	1,000 00	
For the Department of Zoölogy.....	250 00	
	<hr/>	14,500 00
For Brunetière lectures.....		1,275 00
For Alumni Association Fellowship of the College of Physicians and Sur- geons.....	1,375 00	
For University Settlement Society Fel- lowship.....	375 00	
For Annual Fellowship in Zoölogy....	500 00	
For Toppan Prize in Constitutional Law	150 00	
	<hr/>	2,400 00
		<hr/>
		\$24,965 25

## FOR PERMANENT PURPOSES

The Henry Cuyler Bunner Fund.....	\$1,000 00	
Bequest from Joseph W. Harper.....	5,000 00	
On account of Fayerweather legacy....	19,362 46	
	<hr/>	\$25,362 46

## FOR BUILDINGS

On account of the Library.....	\$100,000 00	
On account of Schermerhorn Hall....	100,000 00	
	<hr/>	\$200,000 00

FOR EQUIPMENT OF THE DEPARTMENT OF MECHANICAL  
ENGINEERING

From Mrs. Mary B. Edson.....	\$1,000 00	
From the De La Vergne Refrigerating Co.	250 00	
From a Friend.....	100 00	
	<hr/>	\$1,350 00
		<hr/>
Total gifts for the year.....	\$251,677 71	

## THE NEW SITE

In the early part of the year, Mr. Cornelius Vanderbilt, owing to the condition of his health, felt obliged to retire from the Committee on Buildings and Grounds. His attentive interest in the development taking place at the new site had made him of great service upon the Committee, and his enforced retirement was seriously regretted.

The work of the new site has progressed steadily during the year, with no interruption other than a strike which lasted four weeks, resulting from a controversy between two labor unions as to which union should do the work of installing the Johnson Thermostatic Regulator. At the time of the strike, the work of installing this apparatus was being performed by members of the Plumbers' Union, and it was claimed by members of the Steamfitters' Union. The controversy was finally submitted for arbitration, by mutual agreement, to the President of the University, who sustained the claim of the plumbers. His finding was accepted without demur, and the men returned promptly to work. The loss of these four weeks at a critical period in the spring was a serious misfortune.

On the 4th of November the corner-stones of Havemeyer Hall and of the Engineering Building were laid with such ceremonies as the season of the year would permit. Bishop Littlejohn officiated as chaplain at the laying of the corner-stone of Havemeyer Hall, and the Rev. Dr. Coe at the laying of the corner-stone of the Engineering Building. The corner-stone of Havemeyer Hall was laid by Mrs. Kate B. Belloni, the eldest daughter of the late Frederick

Christian Havemeyer, herself one of the donors of the building. The corner-stone of the Engineering Building was laid by Prof. Crocker, the head of the Department of Electrical Engineering. Addresses were made, in relation to Havemeyer Hall, by Prof. Chandler, the head of the Department of Chemistry, and by the President. In connection with the Engineering Building, the address was made by Prof. Munroe, the head of the Department of Mining.

During the year, the plans for the Mapes Memorial Gate, which is to stand on the Boulevard side of the grounds at 119th Street, were approved, and the gate is now in process of construction. I am glad to be able to report that the Class of '82 of the College has offered to present to the University the 120th Street gate. The plans for this gate also have been approved, and the gift has been accepted.

It is pleasant to report that the signs of the Zodiac which have been placed in the vestibule of the Library, have been presented by Mr. John Williams and Mr. E. B. Tompkins, gentlemen who have been employed in doing various pieces of work at the new site, and who have desired in this way to manifest their interest in the Library Building. The figures were originally made for the New York State Building at the Chicago Exposition of 1893.

The most important decision made by the Trustees during the year, in relation to the new site, was the determination to erect not only the new power-house, but also the gymnasium, which, with the power-house, forms the foundation of the University Building. It had been hoped that some donor might be found who

would present the gymnasium to the University. Unfortunately, no such person had appeared at the time when the decision had to be made ; but it is greatly to be hoped that, in the near future, someone may be found who will be glad to have his name associated with this most important function. The gymnasium, as planned, is an integral part of University Hall, and in view of this fact, and of its great importance to the health of the students, the decision already referred to was reached. The completion of this building also gives to the University a large hall, which on occasions may be used for public purposes. The annual Commencement, for example, can be held in the gymnasium until the academic theatre is completed. The gymnasium will not be finished until some time in the winter.

In order to be in a position to develop the details of the gymnasium intelligently, and also for the sake of securing competent advice in making a place for gymnastic work in the time schedule of the University, the Trustees have appointed as Adviser on Physical Training, Dr. Watson L. Savage, a graduate of Amherst College and of the Long Island College Hospital Medical School. Dr. Savage, besides his medical training, has had large experience both in college athletics and in the management of gymnasia, and it is believed that he is thoroughly competent to give to the Trustees the assistance needed in this connection.

At the date of the writing of this report, the work at the new site is so far completed as to make it clear that our educational work can begin on schedule time in the new home of the University without unreason-

able inconvenience. Within a few weeks, it ought to be possible to submit to the Trustees an accurate statement of the cost of the various buildings and of the development of the site itself. It seems not worth while to attempt to do this now, when so many of the figures would have to be approximate.

I cannot close this report without expressing my grateful appreciation to the Trustees of the strong support they have given to this whole movement. Without such support from them, success in it would have been utterly impracticable. I am grateful, also, to the various people in the community who, by their liberal gifts, have done so much to encourage the movement and to bring it to its present position of assured success. I am confident that, when it has been ascertained how large a sum is necessary to enable the Trustees to liquidate the debt that has been temporarily incurred in this connection, people will be forthcoming who will be glad to relieve the University of this temporary burden. In the meanwhile, it is apparent that the net result of the enterprise has been to add largely to the estate of the University, and to its equipment for the successful conduct of its work. There is no reason to doubt that, under the favorable conditions prevailing at the new site, the number of students will greatly and rapidly increase, and that the future which has thus been secured for our educational development, will be a source of pride and congratulation to all who are interested in the welfare of Columbia University and of the City of New York.

Respectfully,

SETH LOW,

*President.*

## APPENDIX

### VACANCIES DURING ACADEMIC YEAR 1896-97

#### *By Death*

DOUGLAS EWELL, M.D.,	Assistant Demonstrator of Anatomy.
WINFIELD JOHNSON, Ph.G.,	Assistant Demonstrator in Chemistry and Physics.

#### *By Resignation*

THOMAS EGLESTON, E.M., Ph.D., LL.D.,	Professor of Mineralogy and Metallurgy.
CHARLES F. CHANDLER, M.D., Ph.D., LL.D.,	Professor of Chemistry and Medical Jurisprudence in the College of Physicians and Surgeons.
GEORGE M. CUMMING, A.B.,	Professor of Law.
FERDINAND G. WEICHMANN, Ph.D.,	Instructor in Chemical Philosophy and Chemical Physics.
GEORGE LIVINGSTON BRODHEAD, M.D.,	Instructor in Obstetrics.
JOHN S. ELY, M.D.,	Assistant in Pathology and Curator.
HARRISON G. DYAR, B.S., A.M.,	Assistant in Bacteriology.
LUTHER E. GREGORY, C.E.,	Assistant in Mechanical Engineering.
ASA S. IGLEHART, A.B.,	Assistant in Physics.
FRANCIS A. PROVOT, C.E.,	Assistant in Mathematics.

#### *By Expiration of Term*

JOHN ORDRONAU, M.D., LL.D.,	Professor of Medical Jurisprudence.
HENRY C. BOWEN,	Tutor in Quantitative Analysis.
JOHN E. HILL, Ph.D.,	Tutor in Mathematics.
ALEXANDER R. CUSHMAN, Ph.D.,	Assistant in Chemistry.
NATHAN RUSSELL HARRINGTON, A.M.,	Assistant in Zoölogy.
VANDERPOEL ADRIANCE, M.D.,	Assistant in Normal Histology.
JOHN ALEXANDER MATHEWS, M.S., A.M.,	Assistant in Assaying.
CHARLES A. GUNN, B.S.,	Assistant in Architecture.
SOLOMON A. JOFFE, M.S.,	Assistant in Mathematics.

HEINRICH RIES, Ph.D.,	Assistant in Mineralogy.
FREDERICK BANCROFT, Ph.D.,	Lecturer on American History.
GASTON DOUAY,	Lecturer in the Romance Languages and Literatures.
ALEXANDER TISON,	Lecturer on Equity.
GEORGE MÜLLER, Ph.B.,	Lecturer on Chemistry.
HENRY ARTHUR GRIFFIN, M.D.,	Lecturer in Materia Medica and Thera- peutics.
DAVID BANDLER, A.B., LL.B.,	Prize Lecturer in the Law School.

## PROMOTIONS DATING FROM JULY 1, 1897

CHARLES E. PELLEW, E.M.,	From Demonstrator of Chemistry and Physics To Adjunct Professor of Chemistry.
ALEXANDER B. JOHNSON, M.D.,	From Instructor in Minor Surgery at Roosevelt Hospital To Clinical Lecturer in Surgery at Roosevelt Hospital.
HERMANN T. VULTÉ, Ph.D.,	From Tutor in Chemistry To Instructor in General Chemistry.
JAMES EWING, M.D.,	From Tutor in Normal Histology To Instructor in Clinical Microscopy.
EDMUND HOWD MILLER, Ph.D.,	From Tutor in Analytical Chemistry and Assaying To Instructor in Analytical Chemistry and Assaying.
MARSTON TAYLOR BOGERT, A.B., Ph.B.,	From Assistant in Chemistry To Tutor in Organic Chemistry.
ARTHUR PINE VAN GELDER, Ph.B.,	From Assistant in Chemistry To Tutor in General Chemistry.

## CHANGES OF TITLES

JOHN W. BURGESS, Ph.D., LL.D.,	From Professor in History, Political Science, and Constitutional Law To Professor of Political Science and Constitutional Law.
ALFRED J. MOSES, Ph.D.,	From Adjunct Professor of Mineralogy To Professor of Mineralogy.
HERBERT L. OSGOOD, Ph.D.,	From Adjunct Professor of History To Professor of History.
WILLIAM A. DUNNING, Ph.D.,	From Adjunct Professor of History To Professor of History.
THOMAS SCOTT FISKE, Ph.D.,	From Adjunct Professor of Mathematics To Professor of Mathematics.
FRANCIS H. MARKOE, M.D.,	From Clinical Lecturer on Surgery To Instructor in Surgery at Bellevue Hospital.

WALTER B. JAMES, M.D.,	From Clinical Lecturer upon Medicine To Instructor in General Diagnosis.
JOHN S. THACHER, M.D.,	From Demonstrator in Pathology To Demonstrator in Pathological Anatomy.
BERN B. GALLAUDET, M.D.,	From Demonstrator of Anatomy To Demonstrator of Anatomy and Instructor in Surgery.
LUCIUS W. HOTCHKISS, M.D.,	From Assistant Demonstrator of Anatomy To Instructor in Surgery at Bellevue Hospital.
RICHARD H. CUNNINGHAM, M.D.,	From Assistant Demonstrator in Physiology To Demonstrator in Physiology.
SAMUEL A. TUCKER, Ph.B.,	From Assistant Demonstrator in Toxicology To Tutor in Industrial Chemistry.
BENJAMIN M. JAQUISH, B.S.,	From Assistant Demonstrator in Toxicology To Assistant in General Chemistry.
JOHN W. BRANNAN, M.D.,	From Clinical Lecturer upon Contagious Diseases To Instructor in General Diagnosis.
JAMES S. C. WELLS, Ph.D.,	From Instructor in Qualitative Analysis To Instructor in Analytical Chemistry.
ALEXIS A. JULIEN, Ph.D.,	From Instructor in Microscopy and Micro-biology To Instructor in Geology and Curator.
LOUIS H. LAUDY, Ph.D.,	From Tutor in General and Applied Chemistry To Tutor in General Chemistry.
OLIVER S. STRONG, Ph.D.,	From Tutor in Comparative Neurology To Tutor in Comparative Neurology and Assistant in Normal Histology of the Nervous System.
JOHN HENRY LARKIN, M.D.,	From Assistant in Pathology To Assistant in Pathology and Curator of the Museum.
EDMOND KELLY, A.M.,	From Lecturer on Municipal Politics To Lecturer on Municipal Government.
HERBERT NOBLE, A.M., LL.B.,	From Lecturer on Bailments and Carriers and on Code Pleading and Practice To Lecturer on Bailments, Domestic Relations, and Insurance.

## APPOINTMENTS DURING ACADEMIC YEAR 1896-97

WILLIAM MILLIGAN SLOANE, Ph.D.,	Seth Low Professor of History.
GEORGE W. CRARY, M.D.,	Assistant Demonstrator of Anatomy.
GEORGE BALTHAZAR GERMANN, A.B., Pd.M.,	Assistant in Mathematics.
HEINRICH RIES, Ph.D.,	Assistant in Mineralogy.
SOLOMON ACHILLOWITZ JOFFE, M.S.,	Assistant in Mathematics.
WATSON L. SAVAGE, A.B., M.D.,	Adviser on Physical Training.

## APPOINTMENTS DATING FROM JULY 1, 1897

THOMAS EGLESTON, E.M., Ph.D., LL.D.,	Emeritus Professor of Mineralogy and Metallurgy.
HENRY MARION HOWE, A.M., B.S.,	Professor of Metallurgy.
A. BRAYTON BALL, M.D.,	Professor of Clinical Medicine.
FRANK W. JACKSON, M.D.,	Instructor in General Diagnosis.
JAMES DITMARS VOORHEES, M.D.,	Instructor in Obstetrics and Gynecology.
D. BRYSON DELAVAN, M.D.,	Instructor in Laryngology.
GEORGE T. JACKSON, M.D.,	Instructor in Dermatology.
FRANCIS HUBER, M.D.,	Instructor in the Diseases of Children.
FREDERICK PETERSON, M.D.,	Instructor in Neurology.
JOHN B. WALKER, M.D.,	Assistant Instructor in Operative Surgery.
CASSIUS JACKSON KEYSER, A.M.,	Tutor in Mathematics.
FRANCIS PITT SMITH, Ph.B.,	Tutor in General Chemistry.
CHARLES NORRIS, M.D.,	Tutor in Pathology.
CHARLES H. FULTON,	Assistant in Analytical Chemistry.
EDWIN C. HOLDEN, E.M.,	Assistant in Analytical Chemistry.
HENRY CLAPP SHERMAN, A.M.,	Assistant in Analytical Chemistry.
WILLIAM CULLEN UHLIG, Ph.B.,	Assistant in Analytical Chemistry.
SAMUEL SWAYZE SEWARD, A.B.,	Assistant in Literature.
PHILIP ERNEST BRODT, A.B.,	Assistant in Rhetoric.
ALFRED LOUIS KROEBER, A.B.,	Assistant in Rhetoric.
FRANK LEO TUFTS, A.M.,	Assistant in Physics.
SAMUEL GEORGE FITZHUGH TOWNSEND, A.B., E.E.,	Assistant in Electrical Engineering.
WILLIAM ROBERT WILLIAMS, M.D.,	Assistant in Normal Histology.
FRANCIS CARTER WOOD, M.D.,	Assistant in Clinical Microscopy.
FRANK C. HOOPER, Met.E.,	Assistant in Mining.
WILLIAM S. DAY, A.B.,	Assistant in Physics.
JAMES HOWARD MACGREGOR, B.S.,	Assistant in Zoölogy.
SHEPHERD IVORY FRANZ, A.B.,	Assistant in Psychology.
GEORGE LOUIS BEER, A.M.,	Lecturer on Mediæval History.
HENRY OSBORN TAYLOR, A.B., LL.B.,	Lecturer in Literature.
WILLIAM T. PARTRIDGE,	Lecturer in Architecture.
CHARLES T. TERRY, A.B., LL.B.,	Lecturer on Contracts.
GEORGE JAMES BAYLES, Ph.D.,	Prize Lecturer.

## LECTURES

The following public lectures were delivered during the academic year 1896-97 :

Six lectures by Professor Wilhelm Dörpfeld, Ph.D., LL.D., on the following subjects, the first in Room 15, Hamilton Hall, the remainder in Hosack Hall of the New York Academy of Medicine.

- November 9. Troy and the Homeric Citadel.
- “ 12. The Excavations at Olympia.
- “ 13. The Greek Theatre.
- “ 16. The Most Recent Excavations in Greece.
- “ 17. The Acropolis of Athens.
- “ 19. Tiryns and Mycenæ.

In Room 11, Library Building, a reading by Dr. Horace Howard Furness, November 18, on

## THE MERCHANT OF VENICE.

In Room 15, Hamilton Hall, a lecture by Herr L. Viereck, February 15, on

## FRIDTJOF NANSEN AND HIS POLAR EXPLORATIONS.

In Room 15, Hamilton Hall, four lectures on Monday afternoons :

- March 8. Heinrich Heine. Mr. Joseph Winter.
- “ 15. Streets in the Middle Ages. Mr. Louis von Eltz.
- “ 22. Germany after the Thirty Years' War. Mr. Louis von Eltz.
- “ 29. Schiller. Professor Calvin Thomas.

In Room 15, Hamilton Hall, a lecture by Professor G. C. Seibert, Ph.D., D.D., April 12, on

## JOHANNA AMBROSIUS, THE EAST-PRUSSIAN PEASANT POET.

In Room 15, Hamilton Hall, a lecture by Charles R. Lanman, Ph.D., April 20, on

## BUDDHISM AS ILLUSTRATED BY THE MONUMENTS.

In Room 15, Hamilton Hall, on Thursday afternoons, a number of lectures were given under the auspices of the department of Romance Languages and Literatures.

In Room 12, 54 East 49th Street, on Thursday afternoons, a number of lectures were given under the auspices of the department of Indo-Iranian Languages.

At the American Museum of Natural History—four lectures on Saturday evenings,

MOUNTAIN RANGES OF WESTERN NORTH AMERICA.

- December 5. The Rocky Mountains. Prof. James F. Kemp.  
 “ 12. The Mountains of Alaska. Dr. C. Willard Hayes.  
 “ 19. The Cascade Range. Mr. Bailey Willis.  
 “ 26. The Sierra Madre of Mexico. Mr. H. M. Wilson.

At the American Museum of Natural History—five lectures on Saturday evenings,

ANTHROPOLOGY AND ETHNOLOGY.

- January 2. The Oldest Signs of Man in America. Dr. Daniel G. Brinton.  
 “ 9. The Native Industrial Arts of the Indians of the United States. Dr. Otis T. Mason.  
 “ 16. Art of the North American Indians. Dr. Franz Boas.  
 “ 23. The Organization of the Family among North American Indians. Dr. Livingston Farrand.  
 “ 30. Some Peculiar Peoples of Southern France. Dr. William Z. Ripley.

At the American Museum of Natural History—four lectures by Mr. C. E. Pellew, on Saturday evenings:

ALCOHOL AND ALCOHOLIC BEVERAGES.

- February 6. History. Fermentation.  
 “ 13. Fermented Liquors. Wine, Beer, Kumyss.  
 “ 20. Distillation and Distilled Liquors.  
 “ 27. General and Special Properties of Alcohol.

At the American Museum of Natural History—four lectures on Saturday evenings:

## BOTANICAL STUDIES.

- March 6. Studies among the Lower Fungi. Prof. L. M. Underwood.
- “ 13. Edible and Poisonous Mushrooms. Prof. Smith Ely Jelliffe.
- “ 20. The Haunts and Habits of Ferns. Prof. L. M. Underwood.
- “ 27. Medicinal Plants. Prof. Smith Ely Jelliffe.

At the Metropolitan Museum of Art—four lectures by Professor John F. Weir, on Saturday mornings :

## SOME PRINCIPAL CENTRES AND MASTERS IN ART.

- December 5. A Roman Itinerary in the Time of Michael Angelo.
- “ 12. The Florentine Renaissance in Art.
- “ 19. Nuremberg and Albert Durer.
- “ 26. A Glimpse of Holland in the Time of Rembrandt.

At the Metropolitan Museum of Art—four lectures by Mr. D. Cady Eaton, on Saturday mornings :

## ATHENS OF TO-DAY.

- January 2. Preparatory Review of Greek Sculpture.
- “ 9. New Items of Athenian History. The Acropolis since 1885.
- “ 16. Votive Statues in Acropolis Museum. Modern Edifices.
- “ 23. New Museum. Lesson of Funereal Sculpture. And one lecture on
- “ 30. Evolution of the French Chateau.

At the Metropolitan Museum of Art—four lectures by Professor John C. Van Dyke, L.H.D., on Saturday mornings :

## HIGHER BEAUTIES OF PAINTING.

- February 6. Truth or the Point of View.
- “ 13. Individuality or the Personal Element.
- “ 20. Imagination or the Creative Faculty.
- “ 27. Pictorial Poetry and Feeling.

At the Metropolitan Museum of Art—four lectures by Mr. Frederic Crowninshield, on Saturday mornings:

## MURAL PAINTING.

- March 6. The Function of Mural Painting.
- “ 12. The Technics of Mural Painting.
- “ 20. The Technics of Mural Painting.
- “ 27. The Education and Practice of the Mural Painter.

In the Great Hall, Cooper Union—five lectures by Professor Charles Sprague-Smith, on Tuesday evenings:

## THE ARTISTS OF BARBIZON.

- December 1. The Forest of Fontainebleau.
- “ 8. Millet.
- “ 15. Corot.
- “ 22. Rousseau.
- “ 29. Barye.

In the Great Hall, Cooper Union—four lectures by Professor Homer B. Sprague, on Tuesday evenings:

## MILTON.

- January 5. Milton, 1608-1642. A Study of his Preparatory Life.
- “ 12. Milton, 1642-1674. A Study of his Public Life and Retirement.
- “ 19. Milton's Paradise Lost, I. A Study of Milton's Primeval Universe.
- “ 26. Milton's Paradise Lost, II. A Study of Milton's New Created World. The Temptation. The Fall.

In the Great Hall, Cooper Union—four lectures on Tuesday evenings:

- February 2. This Great City. Dr. E. R. L. Gould.
- “ 9. The City's Housekeeping. Mr. Arthur W. Milbury.
- “ 16. The City's Traffic. Mr. R. R. Bowker.
- “ 23. The City's Purse. Mr. Henry DeForest Baldwin.

In the Great Hall, Cooper Union—five lectures by Mr. Garrett P. Serviss, on Tuesday evenings:

ASTRONOMY.

- March 2. The Beginnings and Aims of Astronomy.
- “ 9. The Telescope and the Spectroscope.
- “ 16. The Sun.
- “ 23. The Moon and the Planets.
- “ 30. Other Suns and Systems.

At Carnegie Chamber-Music Hall—ten lectures on musical subjects:

- February 15. Evolution of the Wind Instrument. Prof. W. Adams Brown.
- “ 23. Evolution of the Pianoforte. Mr. Morris Steinert.
- March 1. Folk Music. Mr. H. E. Krehbiel.
- “ 8. Orientalism in Music. Mr. E. S. Kelley.
- “ 15. Analysis of Timbre. Prof. William Hallock.
- “ 22. Development of Opera. Mr. Philip Hale.
- “ 29. Church Music. Prof. H. W. Parker.
- April 5. The Utility of Music. Mr. H. T. Finck.
- “ 12. Musical Analysis. Dr. Henry G. Hanchett.
- “ 19. Musical Form. Its Origin and Development.  
Mr. Dudley Buck.

At the Lenox Lyceum—five lectures by M. Ferdinand Brunetière:

LA LITTÉRATURE FRANÇAISE CONTEMPORAINE, 1875-1897.

- April 21. Poésie.
- “ 23. Histoire.
- “ 28. Théâtre.
- “ 29. Critique.
- “ 30. Roman.

## PARENTAGE OF DEGREES

Adelbert College, O.....	5
Alabama Polytechnic Institute .....	1
Albion College, Mich.....	1
Alfred University, N.Y.....	2
Allegheny College, Pa.....	1
Alma College, Mich.....	1
Amherst College, Mass.....	17
Augustana College, Ill.....	2
Bates College, Me.....	4
Bellevue Hospital Medical College, N. Y.....	3
Bethel College .....	1
Blackburn University, Ill.....	1
Boston University.....	2
Bowdoin College, Me.....	3
Brooklyn Polytechnic Institute.....	10
Brown University, R. I.....	9
Bucknell University, Pa.....	1
Butler University, Ind.....	1
Case School of Applied Science, O.....	1
Central College, Ky.....	1
Centre College, Ky.....	1
Christian Brothers College, Mo.....	1
Citadel Academy, S. C.....	1
Colby University, Me.....	3
Colgate University, N. Y.....	4
College of the City of New York.....	70
College of Pharmacy, N. Y.....	9
College of Physicians and Surgeons, Ia.....	1
Columbia University, N. Y.....	128
Cornell University, N. Y.....	4
Cornell College, Ia.....	2
Cumberland University, Tenn.....	3
Dartmouth College, N. H.....	5
Davidson College, N. C.....	1
Denison University, O.....	1
Earlham College, Ind.....	2
Emory and Henry College, Va.....	2
Fordham College.....	1
Franklin and Marshall College, Pa.....	3
Gammon Theological Seminary.....	1

General Theological Seminary, N. Y.....	2
Georgetown University, D. C.....	1
Hamilton College, N. Y.....	4
Hanover College, Ind.....	3
Harvard University, Mass.....	60
Haverford College, Pa.....	1
Highland University, Kan.....	1
Hobart College, N. Y.....	4
Holy Cross College, Mass.....	6
Homœopathic Medical College, Pa.....	1
Indiana State University.....	1
Iowa Western University.....	1
Jefferson Medical College, Pa.....	1
Johns Hopkins University, Md.....	5
Kansas State University.....	2
Kenyon College, O.....	1
Keystone Normal School.....	1
Lafayette College, Pa.....	6
Lake Forest University, Ill.....	1
Lehigh University, Pa.....	1
Leland Stanford, Junior, University, Cal.....	11
Lenox College, Ia.....	1
Lincoln University.....	2
Louisville High School, Ky.....	1
McMinnville College, Ore.....	1
Manhattan College, N. Y.....	10
Marietta College, O.....	3
Maryland Agricultural College.....	1
Massachusetts Institute of Technology.....	3
Medical College of Ohio.....	1
Michigan Agricultural College.....	1
Middlebury College, Vt.....	1
Millsop College, Miss.....	1
Missouri State University.....	1
Mt. St. Mary's College, Md.....	1
National Normal University.....	1
National University Law School, D. C.....	1
New York University.....	12
Niagara University, N. Y.....	1
Northwestern University, Ill.....	1
Notre Dame University, Ind.....	1

Oberlin College, O.....	3
Ohio State University .....	3
Ohio University.....	1
Ohio Wesleyan University.....	2
Olivet College, Mich .....	2
Omaha Medical College, Neb.....	1
Oregon State University.....	1
Otterbein University, O.....	2
Penn College, Ia.....	1
Pomona College.....	1
Princeton University, N. J.....	36
Rensselaer Polytechnic Institute, N. Y.....	1
Rutgers College, N. J.....	11
St. Francis Xavier College, N. Y.....	10
St. John's College, Md.....	1
St. John's College, N. Y.....	1
St. Lawrence University, N. Y.....	1
St. Louis Medical College, Mo.....	1
Seton Hall College, N. J.....	3
Shurtleff College, Ill.....	1
South Carolina Medical College.....	1
Southwest Kansas College.....	2
State Normal College, N. Y.....	1
State University of Iowa .....	1
Stevens Institute of Technology, N. J.....	3
Swarthmore College, Pa.....	1
Syracuse University, N. Y.....	3
Trinity College, Conn.....	14
Trinity College, N. C.....	1
Trinity University, Tex.....	2
Tulane University, La. ....	2
Union College, N. Y.....	5
University of Alabama.....	2
University of California.....	3
University of Chicago.....	2
University of Cincinnati.....	3
University of Georgia.....	2
University of Kansas.....	2
University of Kentucky.....	1
University of Louisville, Ky.....	1
University of Michigan.....	9

University of Minnesota.....	5
University of Missouri.....	1
University of Nebraska.....	3
University of New Orleans, La.....	1
University of Pennsylvania.....	2
University of Rochester, N. Y.....	4
University of the South.....	1
University of Tennessee.....	4
University of Vermont.....	3
University of Virginia.....	2
University of Wisconsin.....	4
Upper Iowa University.....	1
Vanderbilt University, Tenn.....	1
Wabash College, Ind.....	4
Washburn College, Kan.....	1
Washington University, Mo.....	1
Wesleyan University, Conn.....	7
Western Reserve University, O.....	1
Wittenberg College, O.....	2
Whitworth College, Wash.....	2
Williams College, Mass.....	11
Wooster University, O.....	2
Yale University, Conn.....	86

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### Foreign Institutions :

Central Turkey College.....	2
Gymnasium of Odessa, Russia.....	1
McGill University, Canada.....	1
Polytechnikum, Dresden.....	1
Queens University, Canada.....	1
Urmi College, Persia.....	1
University of France.....	1
University of Havana.....	3
University of Munich.....	1
University of New Brunswick, Canada.....	2
University of Paris.....	1
University of Santo Domingo, Cuba.....	1
University of Toronto, Canada.....	3

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Institutions		Degrees.....	
American.....	145	Students holding more	
Foreign.....	13	than one degree....	109
	<hr/>	Total students hold-	<hr/>
Total.....	158	ing degrees.....	672

## RESIDENCES OF STUDENTS

	College.	Law.	Medicine.	Applied Science.	Political Science.	Philosophy.	Pure Science.	Total.
New York City.....	145	152	280	222	25	31	25	880
Brooklyn .....	54	25	53	48	1	8	4	193
Alabama.....	...	2	3	...	...	2	...	7
Arkansas.....	...	...	2	...	...	2	...	4
California.....	1	4	5	3	1	...	...	14
Colorado .....	1	3	2	...	...	...	...	6
Connecticut.....	6	6	20	7	1	...	...	40
District of Columbia.....	...	...	...	...	1	...	...	1
Florida.....	...	...	1	...	...	...	...	1
Georgia.....	3	3	4	2	...	...	...	12
Illinois.....	...	5	3	...	3	1	...	12
Indiana.....	1	4	1	1	1	2	...	10
Indian Territory.....	...	...	1	...	...	...	...	1
Iowa.....	1	6	...	2	1	1	1	12
Kansas.....	...	4	2	...	...	...	1	7
Kentucky.....	...	1	5	...	1	1	...	8
Louisiana.....	...	...	...	1	...	...	1	2
Maine.....	3	4	6	...	1	...	...	14
Maryland.....	...	2	1	2	...	1	...	6
Massachusetts.....	2	8	18	1	5	1	1	36
Michigan.....	1	1	2	...	2	1	...	7
Minnesota.....	...	1	4	...	...	1	...	6
Mississippi.....	...	...	1	...	...	...	...	1
Missouri.....	1	4	1	3	...	...	...	9
Montana.....	...	4	...	...	...	...	...	4
Nebraska.....	...	2	4	...	...	...	...	6
New Hampshire.....	...	...	2	...	...	2	...	4
New Jersey.....	32	31	89	41	5	10	6	214
New Mexico.....	...	1	...	...	...	...	...	1
New York State*.....	47	36	87	40	7	13	5	235
North Carolina.....	...	1	7	1	...	...	...	9
Ohio.....	...	12	4	7	4	6	4	37
Oklahoma Territory.....	...	1	...	...	...	...	...	1
Oregon.....	1	3	...	...	...	...	1	5
Pennsylvania.....	...	14	7	3	3	5	1	33
Rhode Island.....	2	2	1	2	1	...	...	8
South Carolina.....	...	1	...	...	...	1	...	2
Tennessee.....	...	3	1	2	1	...	...	7
Texas.....	2	...	1	...	...	2	...	5
Utah.....	1	2	...	1	...	...	...	4
Vermont.....	...	2	2	1	...	3	1	9
Virginia.....	...	2	2	...	...	...	1	5
Washington.....	...	2	...	...	...	2	...	4
West Virginia.....	...	...	1	3	1	...	...	5
Wisconsin.....	...	2	4	...	1	...	1	8
	304	356	627	393	66	96	53	1895

\* Exclusive of New York City and Brooklyn.

## FOREIGN COUNTRIES

	College.	Law.	Medicine.	Applied Science.	Political Science.	Philosophy.	Pure Science.	Total.
Brought forward.....	304	356	627	393	66	96	53	1895
Canada.....	1	.....	4	1	.....	1	.....	7
Cuba.....	.....	.....	2	2	.....	.....	.....	4
Ireland.....	.....	.....	1	.....	.....	.....	.....	1
Mexico.....	1	.....	.....	1	.....	.....	.....	2
Persia.....	1	.....	.....	.....	.....	2	.....	3
Russia.....	.....	1	.....	.....	.....	.....	.....	1
Sandwich Islands.....	.....	.....	3	.....	.....	.....	.....	3
South African Republic...	.....	.....	.....	1	.....	.....	.....	1
Spain.....	.....	.....	.....	1	.....	.....	.....	1
Turkey.....	.....	.....	.....	.....	1	1	.....	2
West Indies.....	.....	.....	1	.....	.....	.....	.....	1
	307	357	638	399	67	100	53	1921

# COLUMBIA COLLEGE

## REPORT OF THE DEAN

FOR THE ACADEMIC YEAR ENDING JUNE 30, 1897.

*To the President of Columbia University  
in the City of New York.*

SIR:

I beg to submit herewith my report upon the College for the academic year ending June 30, 1897:

The number of students matriculated at the beginning of the year was 309; 14 entered subsequently, making the total number 323, distributed in the several classes as follows:

Seniors.....	53
Juniors.....	46
Sophomores .....	62
Freshmen .....	101
University students taking one or more courses in the College.....	8
Special students.....	53
	<hr/>
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The ages of the students at the beginning of the year were as in the following table:

### AGES OF STUDENTS

Class.	Number in Class.	Average Age.	Oldest.	Youngest.
Senior.....	53	21.2	36	18
Junior.....	46	19.4	25	17
Sophomore ....	62	18.6	28	17
Freshman.....	101	17.8	27	15
University stu- dents .....	8	22.5	27	19
Special students	53	20.1	35	16
	<hr/>	<hr/>	<hr/>	<hr/>
	323	19.2	36	15

Number in each class of the following ages:

	Seniors.	Juniors.	Sopho- mores.	Fresh- men.	University Students.	Spe- cials.
Between 15 and 16	..	..	..	4	..	..
" 16 and 17	..	..	..	13	..	1
" 17 and 18	..	1	15	27	..	3
" 18 and 19	2	11	20	33	..	8
" 19 and 20	9	18	14	12	1	14
" 20 and 21	16	8	10	9	1	10
" 21 and 22	12	4	..	2	1	8
" 22 and 23	4	3	1	..	3	4
" 23 and 24	1	..	1	..	..	2
" 24 and 25	5	..	..	..	1	..
" 25 and 26	2	1	..	..	..	2
" 26 and 27	1	..	..	..	1	..
" 27 and 28	..	..	..	1	..	..
" 28 and 29	..	..	1	..	..	..
" 29 and 30	..	..	..	..	..	..
" 30 and 31	..	..	..	..	..	..
" 31 and 32	..	..	..	..	..	..
" 32 and 33	..	..	..	..	..	..
" 33 and 34	..	..	..	..	..	..
" 34 and 35	..	..	..	..	..	..
" 35 and 36	..	..	..	..	..	1
" 36 and 37	1	..	..	..	..	..

The residences of the students were as follows :

Brooklyn, N. Y.....	58
California .....	1
Colorado.....	1
Connecticut.....	6
Georgia.....	3
Iowa.....	2
Maine .....	3
Massachusetts .....	2
Mexico.....	1
Michigan.....	1
Missouri.....	1
New Brunswick, Canada.....	1
New Jersey.....	33
New York City.....	148
New York State*.....	50
Ohio .....	1
Oregon.....	3
Pennsylvania.....	1
Persia, Asia.....	1
Rhode Island.....	2
Sandwich Islands.....	1
Texas .....	2
Utah .....	1

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\* Exclusive of the cities of New York and Brooklyn.

Of the students admitted, eleven were received on certificate from other colleges; three to the Freshman class, one each from the following institutions: Yale College, Connecticut; University of California, California; College of New Jersey, Princeton; three to the Sophomore class, one each from the following institutions: College of St. Francis Xavier, New York; New York State Normal College, New York; Hamilton College, New York; three to the Junior class, one each from the following institutions: Yale College, Connecticut; University of Pennsylvania, Philadelphia; and the College of the City of New York; two to the Senior class, one from Harvard College, Massachusetts, and one from Cornell College, Iowa. One of the Seniors elected the first-year course in the Law School.

Of the members of the Freshman class, forty-five were admitted provisionally—that is, with entrance conditions to fulfil. Such students are held under probation till the end of the first half-year. Just prior to the close of the probationary period set, the Committee on Entrance Examinations, in conjunction with the Dean, consider the special reports made by heads of departments in the case of each conditioned student, and determine whether he is to be admitted to full standing, have his period of probation extended, or dropped from the roll.

Under this provision, thirty-six were advanced to full standing at the end of the first term; and nine had their period of probation extended until the beginning of the next academic year.

One member of the Senior class, one of the Junior class, three of the Sophomore class, five of the Freshman class, and five Special students withdrew during the year.

Fifty members of the Senior class had conferred<sup>ed</sup> upon them, at the Commencement held on the 9th instant, the degree of Bachelor of Arts. Two members of the Senior class failed to satisfy all the requirements and were not graduated.

One student, who was received on certificate from another college at the beginning of the year, and who had deficiencies

in the Junior year, made good all deficiencies of that year, and by extra diligence satisfied all the requirements for graduation, and received the degree of Bachelor of Arts at Commencement.

The relations of this College to Barnard College are such that Columbia is responsible for the efficiency and sufficiency of all the courses in that College leading to a degree, and on proper certification grants to students thereof the degree of Bachelor of Arts. It was my duty, therefore, as Dean of this College, to examine with care the courses pursued by the members of the Senior class of Barnard College from the beginning to the end of their academic career. This duty I discharged, and certified to the President that twenty members of that class had complied with all the requirements for the baccalaureate degree—and those so certified received that degree at Commencement.

The subjects of study selected by the Special students were:

Architecture.....	3	Literature .....	4
Astronomy .....	1	Logic .....	2
Botany .....	1	Mathematics.....	20
Chemistry.....	11	Mechanics .....	1
English.....	24	Music .....	2
French .....	21	Philosophy.....	12
Geology.....	4	Physics.....	10
German.....	21	Political Economy .....	19
Greek .....	5	Psychology.....	3
Hebrew.....	1	Rhetoric. ....	39
History .....	23	Semitic.....	1
Latin .....	13	Zoölogy .....	2

The required number of hours of attendance per week is, for the Freshman class, fifteen, and for the Sophomore class, sixteen. Of these, three in each class must be given to French or German, at the option of the student. A member of the Sophomore class may substitute Chemistry, three hours a week, for any language, ancient or modern, except English.

Of the forty-six members of the Junior class, one was a "belated" Senior,—that is to say, was required to matriculate as a Junior because of his deficiency in some requirements of that class; of the sixty-two members of the Sophomore class, six were, in the same sense, "belated" Juniors; and of the one hundred and one members of the Freshman class, four were, in the same sense, "belated" Sophomores.

The election in modern languages in the Sophomore and Freshman classes was as indicated below :

	Number in Class.		Total.
	Sophomore.	Freshman.	
	62	101	163
French .....	36	54	90
German.....	19	46	65
Chemistry in place of a modern language.....	7	..	7
Number repeating the year and not required to take a modern language.....	..	1	1

In the Sophomore class the number who elected Chemistry was 23, with the following substitutions :

Chemistry in place of Greek.....	13
Chemistry " " Latin.....	3
Chemistry " " French ....	4
Chemistry " " German .....	3

Of the fifteen hours a week required of the Junior class, four hours are given to prescribed studies, to wit :

Logic and Psychology..... 2 hours.

History and Political Economy..... 2 hours.

The remaining eleven hours are given to elective courses.

The following table indicates numerically the elections made among the fifty-three courses open to Juniors :

Architecture (12 courses—none elected).....		
Astronomy (1 course—not elected).....		
Botany (2 courses—1 elected).....		1
Chemistry (2 courses—both elected).....		20
English (4 courses—3 elected).....	53	
Deduct for repetition.....	15	38
French (3 courses—all elected).....		12
Geology (1 course).....		3
German (3 courses—all elected).....	13	
Deduct for repetition.....	3	10
Greek (2 courses—both elected).....	12	
Deduct for repetition.....	1	11
Hebrew (1 course).....		3
History (1 course).....		12
Italian (2 courses—1 elected).....		1
Language (1 course).....		1
Latin (3 courses—all elected).....	28	
Deduct for repetition.....	12	16
Mathematics (2 courses—both elected).....	6	
Deduct for repetition.....	2	4
Mechanics (1 course).....		9
Physics (3 courses—1 elected).....		7
Political Economy (1 course).....		4
Rhetoric (5 courses—4 elected).....	27	
Deduct for repetition.....	10	17
Spanish (2 courses—1 elected).....		2
Zoölogy (1 course).....		5

The studies of the Senior year are wholly elective, and cover a wide range. In addition to courses offered in philosophy, philology, and letters, in pure science, in history and political science, the first-year courses in the Schools of Applied Science, Medicine, and Law are open to them, and such as may desire to do so can prepare themselves for advanced standing in those schools by electing these first-year courses, as a whole or in part, and counting them for the degree of Bachelor of Arts.

The elections made by members of the Senior class are as in the following statement :

In Philosophy, Philology, and Letters :

English (4 courses—all elected).....	32	
Deduct for repetition.....	5	27
Germanic Languages and Literatures (10 courses—4 elected).....	10	
Deduct for repetition.....	3	7

Greek Language and Literature (8 courses—5 elected).....	10	
Deduct for repetition.....	2	8
Language, general introduction to study of (1 course).....		2
Literature (3 courses—all elected).....	24	
Deduct for repetition.....	6	18
Music (2 courses—1 elected).....		2
Semitic (12 courses—9 elected).....	11	
Deduct for repetition.....	7	4
Philosophy (3 courses—all elected).....	13	
Deduct for repetition.....	2	11
Psychology (6 courses—4 elected).....	15	
Deduct for repetition.....	2	13
Education (5 courses—all elected).....	9	
Deduct for repetition.....	4	5
Rhetoric (English Composition).....		7
Romance Languages and Literatures (12 courses—8 elected).....	13	
Deduct for repetition.....	5	8
Romance Philology, introduction to.....		1

## In Pure Science :

Astronomy (3 courses—1 elected).....		7
Botany (6 courses—4 elected).....		11
Chemistry (3 courses—2 elected).....		9
Geology (3 courses—2 elected).....		6
Mathematics (4 courses—1 elected).....		1
Mechanics (3 courses—2 elected).....		10
Physics (8 courses—3 elected).....		9
Zoölogy (4 courses—all elected).....	7	
Deduct for repetition.....	1	6

## In History and Political Science :

History (7 courses—all elected).....	49	
Deduct for repetition.....	24	25
Political Economy (5 courses—4 elected).....	32	
Deduct for repetition.....	7	25

## In the Schools of Applied Science :

The full first-year course in the School of Chemistry equivalent to fifteen hours a week.....		1
The full first-year course in the School of Mines equivalent to fifteen hours a week.....		1
Architecture.....		2

## In the School of Medicine :

The full first-year course equivalent to fifteen hours	
a week.....	I
Anatomy.....	I
Physiology.....	I

## In the School of Law :

The full first-year course equivalent to thirteen hours	
a week.....	6
Elements of Jurisprudence.....	I
Real and Personal Property.....	I
Torts.....	I
Criminal Law and Procedure.....	I

There are two prizes for bestowal upon members of the graduating class : The Prize of the Alumni Association and the Chanler Historical Prize.

The three students nominated by the Faculty and submitted to the Senior class as candidates for the Alumni prize of \$50, given annually by the Association of the Alumni to "the most faithful and deserving student of the graduating class," were Edwin Platt Tanner, Frederic Hassard Cluff, and Francis Bertram Elgas ; and Edwin Platt Tanner was chosen by the class to receive the prize.

The Chanler Historical Prize, consisting of the income of a fund of \$1000, bequeathed by J. Winthrop Chanler, of the Class of 1847, and given annually to that member of the graduating class who shall be the author of the best original manuscript essay in English prose on the history of civil government in America, or some other historical subject assigned by the Faculty, was awarded at Commencement to Morris Lincoln Strauss for an essay upon "The Formation of the State of California."

Under the regulations, free tuition was granted during the past year to students :

In the Senior Class.....	10
In the Junior Class.....	4
In the Sophomore Class.....	3
In the Freshman Class.....	I
(who had been a student for two years in the School of Mines)	

and reduced tuition to two Sophomores and one Special student.

Remission or reduction of fees cannot be granted to any student during the first year of his connection with the College.

The whole number of applicants for admission, who were examined in the week ending June 12, 1897, was 230, distributed as follows :

Preliminary : those who take part of their examination and are candidates for the class entering in October, 1898.....	105
Final : those who took the preliminary examination a year ago and are candidates for the class entering in October, 1897.....	73
Full : those who take the entire examination at once and are candidates for the class entering in October, 1897.....	49
Special students.....	3
Total.....	230

The connection of Columbia College with the present site will cease with the close of the present academic year. The twoscore years that will have elapsed between the abandonment of College Place and the occupancy of the site on Morningside Heights have been years of anxiety, endeavor, change, and substantial advancement. The year of the removal to Forty-ninth Street was signalized by the adoption, after long and careful deliberation on the part of the Trustees, of a statute remarkable for educational foresight and wisdom. It provided, in brief :

1. A university course of study to be conducted in three schools, viz. :

(a) A School of Letters, in which should be pursued the following subjects : Moral and Intellectual Philosophy, including an analysis of the moral and intellectual powers ; *Æsthetics*, or the principles of taste and art ; the History of Philosophy ; appropriate literature of the Greeks and Ro-

mans ; Oriental and Modern Languages, as far as possible ; Comparative Philology ; Ethnology.

(*b*) A School of Science in which should be pursued the following subjects : Mechanics and Physics ; Astronomy ; Chemistry and Mineralogy ; Geology and Palæontology ; Engineering ; Mining and Metallurgy ; Arts of Design ; History of Science ; Natural History ; Physical Geography.

(*c*) A School of Jurisprudence, in which should be pursued the following subjects : History ; Political Economy ; Political Philosophy ; the Principles of National and International Law ; Civil and Common Law ; the writings of the Greeks and Romans, and of the modern civilians and jurists, appropriate to the last three subjects.

2. An extended and liberal undergraduate course, involving three elective courses in the Senior year respectively adapted to fit students to enter upon the several university courses.

3. Prize scholarships.

4. Fellowships, with or without stipends.

The immediate results were an enlarged academic curriculum and the addition of several professors to the Faculty of the College.

In the fall of 1857, the elective courses in the Senior year were inaugurated.

A year later the university course of study was put into partial operation. Professor Arnold Guyot delivered a course of lectures on comparative physical geography in its relation to history and modern civilization ; Mr. George P. Marsh, a course upon the English language ; Professor W. G. Peck, upon Engineering in all its branches ; Professor C. W. Hackley, upon Physical Astronomy ; Professor Nairne, upon Ethics and Moral Philosophy ; and Professor T. W. Dwight, upon Municipal Law. The gentlemen engaged were distinguished in their chosen departments and the courses given were of a high order, but the time seemed not to be ripe for the success of such an enlarged scheme and the project was abandoned after one year's trial. The immediate outcome of the attempt was the Law School—a partial

realization of the contemplated School of Jurisprudence, which the School of Political Science, founded in 1880, made complete.

The general state of educational knowledge and requirement of that day, the restricted condition of the finances of the College, and the anxious and disturbed period of the Civil War, made impracticable for some time any sustained effort to carry into effect the details of the statute.

In 1864, the "School of Science" had imperfect expression in the School of Mines and Metallurgy then begun, and has since found adequate expression in the growth of, and diversification of courses in, that School, and in the School of Pure Science created in 1892.

In 1868, substantial prizes in Greek were offered for competition to members of the Junior class; and in 1873, prizes in Rhetoric and English Composition were established to be awarded for the best theses submitted by members of the graduating class at the end of their course.

In 1871-72, fourteen scholarships of the annual value of one hundred dollars each were created for competition among members of the Junior, Sophomore, and Freshman classes, respectively; at the same time two fellowships in literature and science open to members of the Senior class, each of the annual value of five hundred dollars, to be held for three years, were instituted.

These fellowships gave the successful competitors opportunity to pursue advanced courses in letters or science at home or abroad, and there are members of the present College Faculty who can, from personal experience, testify to their beneficial effect.

In 1883, the Trustees provided that a course of collegiate study equivalent to that provided for young men in the College, should be offered to such women as might desire to avail themselves of it, to be pursued under the general direction of the Faculty of the College. Each student admitted was to be entirely free as to where and how she should pursue her studies, and was to be examined in writing at stated times by officers of the College. The plan as at first adopted

was subsequently modified so as to authorize the conferring of the degree of Bachelor of Arts upon students who had satisfactorily completed the full course prescribed for such degree, and to grant permission to women graduates of Columbia, and of other colleges in good repute, to study for higher degrees under the direction of the Faculty. The principal advantage of the course was that it gave opportunity to test the instruction of young women by a standard the same as that applied to the instruction of young men, and thus to encourage the better education of women. It led to the establishment, in 1889, of Barnard College for women, now in successful operation and in close affiliation with Columbia.

The choice allowed to Seniors, in 1857, between three elective courses was withdrawn at the close of the academic year 1859-60. In 1864, members of the same class were given an option between the classics and the higher mathematics; in 1872, and again in 1877, this option was extended. In 1880, the whole scheme of instruction was revised and it was provided that, beginning with their Junior year, students should be "permitted to elect from among the subjects of study taught in College such as they prefer to pursue during the remaining years of the course, and to these elective studies may be added German, French, Spanish, and Italian, subject to the condition that they shall attend all the exercises in history, political economy, and the English language and literature belonging to the regular course in Arts for those years." At the same time provision was made by which instruction should be given to graduates of this and other colleges in Greek, Latin, mathematics, astronomy theoretical and practical, methods of research in physics and in chemistry, philosophy, English literature, political economy, history, the Anglo-Saxon language and literature, Spanish and Italian literature, the Sanskrit language and literature, "and also, as soon as satisfactory arrangements can be made for the purpose," in the Hebrew language and literature, natural theology and the evidences of Christianity, comparative philology, natural history in

its several branches, and the principles of the common law. The degree of Master of Arts had thereafter to be sought through one or another of the channels here opened.

Under these provisions, "graduate" or university courses grew steadily and successfully, but in a somewhat irregular way, each department acting largely by and for itself and with little, if any, regard to other departments. The whole scheme of university study, and the several schools that had grown up, needed co-ordination that they might be developed harmoniously according to general law. The present administration has wisely and skilfully brought this about through a proper university organization. As a consequence there are now, in addition to the Faculties of the College, of Medicine, Law, and Applied Science, university Faculties of Political Science, Philosophy, and Pure Science, each having its own special function, and all under a University Council, which is charged with the general supervision of university work as a whole.

The course of study in the College has engaged constant attention; has, as ideas have developed and expanded, been modified from time to time, and has finally resulted in an academic curriculum, to be put into effect on the removal to Morningside Heights, which is so constructed, it is believed, as to secure to every one who follows it successfully all the elements of a liberal education as agreed upon by the best educational authorities in this country, at the same time that he may fit himself, better than ever before, to pursue with advantage advanced university courses, or prepare himself for the professional or other occupation to which he may choose to devote his life.

This brief recapitulation of salient points in the history of progress may serve to show that the brooding period passed here has not been idly or unprofitably spent, that the College has, indeed, done meanwhile its full share in the discussion and attempted solution of the profound pedagogic problems of the time, in the amendment, improvement, and extension of all the educational means employed in making sound scholars, thoughtful men, and good citizens.

That the first conscious steps toward a university were taken on removal to the present temporary site, and that on this site the University has become an accomplished fact, is enough, perhaps, to make memorable the forty years intervening between the departure of the College from its original home and the arrival at what will be, it is hoped, its permanent abiding-place.

Respectfully,

J. H. VAN AMRINGE,

*Dean.*

#### OFFICERS OF INSTRUCTION

Professors.....	26
Adjunct Professors.....	5
Instructors.....	6
Tutors.....	13
Lecturers.....	1
Assistants .....	12

## SCHOOL OF LAW

### REPORT OF THE DEAN

FOR THE ACADEMIC YEAR ENDING JUNE 30, 1897.

*To the President of Columbia University  
in the City of New York :*

SIR :

I have the honor to submit the following report of the work of the Law School for the academic year ending June 30, 1897.

The School continues to show a steady growth in the quality as well as in the number of its student body. Notwithstanding the legislation of last year, requiring of special students the same qualifications for admission as are prescribed for students entering regularly as candidates for the degree of LL.B.,—the effect of which has been practically to eliminate the large class of half-educated special students,—the membership of the School is larger by thirty-four than the total enrollment of last year. The growth of the Law School during the past four years is strikingly exhibited by the following table :

	1893-4.	1894-5.	1895-6.	1896-7.
First Year.....	79	104	143	183
Second Year.....	63	70	80	104
Third Year.....	69	50	60	67
Specials.....	36	41	40	3
	<hr/> 247	<hr/> 265	<hr/> 323	<hr/> 357

There has been an increase, therefore, of 110, or 44.05 per cent. in the attendance in four years, although in the same time the raising of the requirements for admission to the School has had the effect of excluding a large number of undesirable students, whose presence this year would have increased the percentage of gain to at least 60.

The recent growth of the School as a whole is, however, less significant than the increase of the first-year class from 79 to 183 (a growth of 132 per cent.) in the same time.

The increase in the number of the students who have received a college education is equally striking and gratifying. In 1893-94 the number of college graduates was 114, or 42 per cent. of the whole number of students in the School; in 1895-96, the number was 169, or 52 per cent. of the whole; while at the present time the number is 211, or 59 per cent.

The following table gives the subjects taught during the year 1896-97, the names of the instructors, the number of lectures given per week in each subject, and the number of students examined therein:

Instructors.	Courses.	Hours per Week.	Number of Students.
<i>First Year.</i>			
Prof. Hardon....	Common Law Pleading and Procedure.....	2*	153
Prof. Cumming...	Contracts .....	4	158
Prof. Moore.....	Criminal Law and Pro- cedure .....	2	156
Prof. Keener...	{ Elements of Jurispru- dence.....	2	162
	{ Equity .....	2	162
Prof. Kirchwey...	Real and Personal Prop- erty .....	3	159
Prof. Burdick....	Torts .....	2	154
<i>Second Year.</i>			
Prof. Canfield....	Agency .....	2	97
Mr. Noble.....	Bailments.....	2	19
Mr. Bandler.....	Code Practice.....	2*	83

\* For half the year.

Prof. Burgess....	Comparative Constitutional Law.....	3	3†
Prof. Hardon....	Quasi-Contracts.....	2	94
Prof. Keener....	Equity.....	2	103
Mr. Bandler....	Equity Pleading and Procedure.....	2*	11
Prof. Burdick....	Negotiable Paper.....	2	99
Prof. Kirchwey...	Real and Personal Property.....	3	103
Prof. Burdick....	Sales of Personal Property.....	2	97
Prof. Goodnow...	Administrative Law ...	2	4†

*Third Year.*

Mr. Noble.....	Code Pleading and Practice.....	2	19
Mr. Canfield....	Doctrines Peculiar to New York Law.....	1	34
Mr. Tison.....	Equity.....	2	66
Prof. Canfield....	Evidence.....	2	66
Prof. Moore.....	International Law.....	2	3†
Prof. Goodnow...	Municipal Corporations	1	1†
Prof. Burdick....	Partnership.....	2	66
Prof. Keener....	Corporations.....	2	66
Prof. Hardon....	Suretyship and Mortgage.....	2	63
Prof. Hardon....	Wills and Administration.....	2	64
Prof. Smith.....	Conflict of Private Law.	1	3†
Prof. Goodnow...	Law of Taxation.....	1	1†

During the current academic year three hundred and fifty-seven students were registered in the School of Law, exclusive of students registered primarily under other faculties, divided into classes or groups as follows:

Third Year.....	67
Second Year.....	104
First Year. ....	183
Specials.....	3
Students registered in the Law School...	357
Seniors of the College.....	6
Students registered primarily under other Faculties of the University.....	1
Total.....	364

\* For half the year.

† The records of the School of Political Science will show the number of law students taking this course as an optional or for degrees other than the degree of LL.B.

The following is the result of the examination of candidates for a degree held at the close of the year :

Of the sixty-six members of the third-year class who presented themselves for examination, three failed in one or more subjects and therefore failed to receive the degree. Of the six Seniors of the College who presented themselves for examination two failed in one or more subjects.

The lecturers have satisfactorily discharged their duties.

Annexed hereto will be found tables showing the percentage of college graduates in each class and in the School as a whole, and the parentage of college degrees.

Respectfully,

WILLIAM A. KEENER,

*Dean.*

THIRD-YEAR CLASS.	Number of Students.	67	46	68.65	SECOND-YEAR CLASS.	Number of Students.	104	65	62.50	FIRST-YEAR CLASS.	Number of Students.	183	101	55.19	SPECIAL STUDENTS.	Number of Students.	3	0	FIRST-YEAR MEN AND SPECIALS STUDYING FIRST- YEAR SUBJECTS.	First-Year Men and Specials Studying First-Year Subjects.	College Graduates.	Percentage of College Graduates.	TOTAL NUMBER IN SCHOOL.	Total Number of Students in School.	357	212	59.38	TOTAL NUMBER OF COLLEGE GRADUATES IN SCHOOL.	Total Number of Columbia College Graduates.	32	15.09	Number of Graduates of Other Colleges.	180	84.91
	College Graduates.	46	68.65	Percentage of College Graduates.		College Graduates.	101	65	62.50		College Graduates.	183	101	55.19		College Graduates.	3	0		College Graduates.	Percentage of College Graduates.	Total Number of College Graduates.		212	59.38	Total Number of College Graduates.	212		32	15.09	Number of Graduates of Other Colleges.	180	84.91	
	Percentage of College Graduates.	67	46	68.65		Percentage of College Graduates.	104	65	62.50		Percentage of College Graduates.	183	101	55.19		Percentage of College Graduates.	3	0		Percentage of College Graduates.	Total Number of College Graduates.	212		59.38	Percentage of College Graduates.	Total Number of College Graduates.	212		32	15.09	Percentage of Graduates of Other Colleges.	180	84.91	

## PARENTAGE OF COLLEGE DEGREES

Adelbert College.....	1
Allegheny College.....	1
Amherst College.....	9
Bates College.....	1
Blackburn University.....	1
Bowdoin College.....	1
Brown University.....	2
Bucknell College.....	1
Christian Brothers College, St. Louis, Mo.....	1
Colby University.....	1
Columbia College.....	32
Cornell College, Ia.....	2
Emory and Henry College.....	1
Franklin and Marshall College.....	1
Gymnasium, Frankfurt a/M.....	1
Hamilton College.....	1
Hanover College, Ind.....	3
Harvard University.....	25
Haverford College.....	1
Highland University, Kans.....	1
Hobart College.....	1
Johns Hopkins University.....	4
Kenyon College.....	1
Leland Stanford, Jr., University.....	4
Lincoln University.....	1
McGill University, Canada.....	1
McMinnville College, Oregon.....	1
Manhattan College.....	4
Mount St. Mary's College, Md.....	1
New York City College.....	26
New York University.....	4
Polytechnic Institute, Brooklyn.....	4
Princeton University.....	5
Rutgers College.....	1
South Kansas College.....	1
St. Francis Xavier's College.....	2
St. John's College, Md.....	1
St. John's College, N.Y.....	1
Swarthmore College.....	1
Syracuse University.....	1
Trinity College, Conn.....	2
University of California.....	2
University of Chicago.....	1
University of Cincinnati.....	1
University of Georgia.....	1
University of Havana.....	1

University of Kansas .....	1
University of Michigan .....	3
University of Minnesota.....	1
University of Missouri.....	1
University of Nebraska .....	1
University of Rochester .....	2
University of the South.....	1
University of Wisconsin .....	1
Wabash College.....	1
Washburn College .....	1
Washington University, St. Louis, Mo.....	1
Wesleyan University, Conn.....	1
Williams College.....	5
Yale University.....	32
<hr/>	
60 Colleges and Universities.	Total Graduates, 212

# SCHOOL OF MEDICINE

## REPORT OF THE ACTING DEAN

FOR THE ACADEMIC YEAR ENDING JUNE 30, 1897.

*To the President of Columbia University  
in the City of New York:*

SIR:

I have the honor to submit the following report of the work of the College of Physicians and Surgeons for the year 1896-97:

There have been in attendance during the year 639 students, distributed as follows:

First Year.....	256
Second Year.....	155
Third Year.....	149
Old Curriculum.....	22
Special Students.....	57
Total.....	639

1898  
Reg. 224 - (12)  
189 - (1)  
151  
5  
6

Out of this number 240 held degrees as follows:

A.B.....	147
A.B., A.M., M.D.....	1
A.B., Ph.B.....	1
A.B., M.D.....	2
A.M. ....	5
A.M., M.D.....	1
B.S. ....	34
B.Sc.....	1
B.P.....	1

B.L.....	I
Ph.B.....	11
Ph.B., M.D.....	I
Ph.B., LL.B.....	I
Phar.M., B.S.....	I
Ph.G.....	9
M.S.....	I
M.D.....	21
M.B.....	I
Total.....	240

The Department of Anatomy occupied the new anatomical building at the beginning of the session. The increased facilities for practical laboratory work and for instruction by demonstration to small sections of the class have been of the greatest value. It has been possible to carry out the standard of required practical work in a satisfactory manner for both the first- and second-year classes. The comparison of the record of the dissecting room for the session just completed with the preceding year gives the following result :

Session of 1895-96 :

235 students of the first year dissected 3 parts each.

184 " " " second " " 3 " "

Session of 1896-97 :

274 students of the first year dissected 4 parts each.

172 " " " second " " 3 " "

The demonstration room at the northerly end of the new dissecting room has made it practicable to present the natural objects in a satisfactory manner to sections of the class; this important branch of anatomical instruction has been greatly benefited by the new equipment.

While the facilities for practical work are satisfactory as regards dissecting-room space, the Department is obliged to call attention to the urgent need of an enlarged and improved plant for the preservation of anatomical material. The demands of the practical anatomical instruction, and the requirements of the course of operative surgery on the cadaver,

make the thorough preservation of all available material a matter of vital importance. The present cold-storage room does not afford sufficient space for the reception of the material which can be obtained. The Department recommends urgently that the present room be enlarged by including a portion of the adjoining basement. In this connection an improved method of storing subjects has been devised and should be adopted.

Practical instruction by demonstration to sections of the class has been fully and carefully carried out during the year, and has continued to commend itself to the Department as the only rational and successful method of dealing with many topics.

Eleven students have taken courses in the morphological laboratory during the year, divided as follows:

Undergraduates, doing special work as a minor for the M.A. degree :

Course No. XIII., Comparative Neurology, two students.

Course No. XIV., Comparative Myology, one student.

Graduates, candidates for the M.A. degree :

Course No. IX., General Morphology, two students.

Special courses in Morphology, taken by students not candidates for a degree :

Course No. XV., Morphology of the Auditory Apparatus, two students.

Course No. XVII., Morphology of the Female Genito-Urinary Tract, one student.

Course No. XIV., Myology, one student.

The work of the Museum of Human and Comparative Anatomy has progressed well during the year, so far as the accession of new material and new preparations is concerned. The Department is, however, much hampered by the lack of museum cases. The cases transferred from the old museum are filled, and the accessions to the collection must now be stored until the equipment of the new building is completed. The Department hopes that a moderate number of properly

constructed new cases may be obtained soon, as much valuable material is at present stored at considerable risk of breakage and deterioration.

In the same way it is highly desirable to equip the portion of the basement designed for the reception of the osteological reference collection.

The material contained in the Museum has been used extensively for the illustration of practical courses and for demonstrations. In addition, the following Museum lectures have been given during the year, based on series contained in the collection :

1. Morphology of the Ileo-Colic Junction in Vertebrates ; three lectures to the second-year class.
2. Bronchial Tree and Pulmonary Vascular Supply in Mammalia ; two lectures to the second-year class.
3. Morphology of the Mammalian Seminal Vesicles ; one lecture to the second-year class.
4. Human and Comparative Anatomy of the Female Genito-Urinary Tract ; three lectures, by courtesy of the Department of Obstetrics, to the third-year class.

The Museum was represented at the fourth annual exhibition of the New York Academy of Sciences, held in April, 1897, by a series of casts of the adult thoracic cavity and contents, prepared by Dr. J. A. Blake. These casts form a most valuable addition to the collection. Other important series of completed preparations which have been added to the Museum during the year comprise the following :

Additions to series of Ileo-Colic Junction and Alimentary Tract.

Series of Human Myological Variations and Corresponding Comparative Myological Series.

Visceral Anatomy of American Reptiles, especially of the Pit Vipers.

Human and Comparative Anatomy of the Female Genito-Urinary Tract.

Lantern-slides have been made of many of these preparations, by Dr. Leaming, rendering the material available for presentation to a large class.

The following papers have been presented during the year by officers of the Department, based on the research work of the Laboratory :

G. S. Huntington: "Cerebral Fissures and Gyres of two Brains from Natives of New Guinea."

G. S. Huntington: "Corrosion Anatomy, Technique and Mass."

G. S. Huntington: "Ventral Version of Secondary Fore-Brain."

J. A. Blake: "Topography of the Mediastinum and Superior Thoracic Aperture."

These four papers were presented before the ninth annual meeting of the Association of American Anatomists, held at Washington, D. C., in May, 1897.

The following papers were published during the year :

G. S. Huntington: "On Some Points in the Formation and Distribution of the Cervical Plexus in Cynomorphous Monkeys." *Trans. N. Y. Ac. Sciences*, vol. xvi., March 3, 1897.

G. S. Huntington: "Contribution to the Myology of *Lemur bruneus*." *Anat. Anzeiger* (abstract), xiii Bd., Nos. 8 and 9, 1897, and *Trans. N. Y. Acad. Sc.* (in press).

G. S. Huntington: "Topographical Anatomy of the Lungs and Mediastinum in the Fœtus at Term and in the New-Born Child." *Report N. Y. Lying-in Hospital*, 1897.

Dr. J. A. Blake has prosecuted an important morphological research during the winter as Alumni Association Fellow in Anatomy on the Endyma with especial reference to the Metapore. The work is designed to extend over two years. In addition, Dr. Blake has concluded an investigation of the topographical relations of the adult mediastinum and the upper thoracic aperture, which will be published in the *Proceedings of the Association of American Anatomists*.

The Department takes great pleasure in acknowledging the receipt of a large number of very valuable anatomical books and periodicals from Dr. F. H. Markoe. The collec-

tion comprises, among others, a complete set of the *Journal of Anatomy and Physiology*, and of the *Anatomischer Anzeiger*. The need of a good working anatomical library in direct connection with the research laboratory is very apparent. The Department has prospects of eventually acquiring such equipment, and Dr. Markoe's gift will form a most valuable beginning.

In the Department of Physiology instruction has been given by Professors J. G. Curtis and F. S. Lee, and by Drs. R. H. Cunningham and R. Hunt.

During the summer of 1896 the students' laboratory was considerably enlarged; a large demonstration room was assigned to the exclusive use of the physiological teachers; and two small laboratories were added to the space available for research, one of these having been fitted up for the special study of physiological problems by histological methods. All of these additions have been thoroughly equipped, and already have proved their value to the progress of physiology.

The following is a summary of the courses given during the year:

COURSE.		No. of Students, with Candidacy for Degree.	
		Ph.D.	A.M.
I. General Physiology.....	15	2	7
		A.B.	1
		Hearers	5
II. Physiology of Man and Higher Vertebrates.....	418	M.D.	412
		Ph.D.	5
		A.M.	4
		Ph.D.	2
III. Laboratory work of Course I.....	12	A.M.	7
		A.B.	1
		Special	2
IV. Laboratory work of Course II....	9	Ph.D.	5
		A.M.	3
		Special	1
V. Research.....	7	A.M.	3
		Special	4
Total.....	461		
Names repeated.....	20		
Corrected total.....	441		

Since the last report, Dr. R. H. Cunningham, Alumni Association Fellow in Physiology, has been engaged in the investigation of acromegaly; the restoration of co-ordinated voluntary movement after "nerve-crossing"; the cortical centres of the brain of the opossum; and the effects produced by the division of some of the association-tracts of the brain. Dr. Cunningham has been reappointed Fellow for the year 1897-98.

The researches carried on in the Department in 1896-97 by the members of the staff and workers under their direction comprise the following:

- The heliotropism of *Stentor*.
- Protoplasmic movement in *Nitella*.
- The artificial production of monstrosities in the pupæ of moths.
- The determination of sex.
- The form of the muscle-curve in the turtle.
- The form of the muscle-curve in the frog.
- The restoration of co-ordinated voluntary movement after "nerve-crossing."
- Acromegaly in a dog.
- The effects produced by division of some of the association-tracts of the brain.
- The cortical centres in the brain of the opossum.
- Changes in brain-cells during poisoning by hyoscyne and absinth.
- Experiments on the accelerator nerves of the heart.
- Reflex changes in the heart-rate.
- The innervation of the heart of the opossum.
- The innervation of the heart of the guinea-pig.
- Some general physiological properties of the cardiac muscle of the lobster.
- Effect of heat and cold upon the lobster's heart.
- The bactericidal effects of lymph from the thoracic duct.
- The effects upon respiration of electrical stimulation of the central end of the vagus.
- Further researches on the mechanics of deglutition.
- The contractility of the stomach.
- The vagus as a motor nerve of the stomach.
- The power of absorption of alien serum by the peritoneum.
- The physiological effects of intestinal irrigation.

The following publications of workers in the Department appeared during 1896-97 :

- J. G. Curtis, M.D.—The Mechanics of the Circulation. In *An American Text-book of Physiology*. Philadelphia, W. B. Saunders.
- F. S. Lee, Ph.D.—Physiology: The Vital Processes in Health. In *Sickness and in Health*. N. Y., D. Appleton & Co.
- Reproduction. In *An American Text-book of Physiology*. Philadelphia, W. B. Saunders.
- Review of *A Manual of Physiology*, by G. N. Stewart. *The N. Y. Medical Journal*, vol. 63.
- Review of *The Physiology and Pathology of the Cerebral Circulation*, by L. Hill. *The N. Y. Medical Journal*, vol. 64.
- Review of *Physiology for Beginners*, by M. Foster and L. E. Shore. *The N. Y. Medical Journal*, vol. 65.
- R. Hunt, M.D., Ph.D.—Experiments on the Relation of the Inhibitory to the Accelerator Nerves of the Heart. *Journal of Experimental Medicine*, vol. 2.
- S. J. Meltzer, M.D.—On Absorption of Strychnine and Hydrocyanic Acid from the Mucous Membrane of the Stomach. *Journal of Experimental Medicine*, vol. i.
- The same, in the *Transactions of the Association of American Physicians*, vol. xi.
- Ueber die Unfähigkeit des Schleimhaut des Kaninchenmagen Strychnin zu resorbiren. *Centralblatt für Physiologie*, August 8, 1896.
- Experiments on the Faradization of the Stomach of Animals. *New York Medical Journal*, April 24, 1897.
- Ueber Reizversuche mit Inductionsstrome nam Thiermagen. *Archiv für Verdauungskrankheiten*, May, 1897.

P. A. Levene, M.D.—The Influence of Phloridzin on the Blood and Lymph. *The Journal of Experimental Medicine*, vol. ii.

The following papers are in press:

R. H. Cunningham, M.D.—Restoration of Co-ordinated Volitional Movement after "Nerve-Crossing." Acromegaly in a Dog.

The Cortical Centres of the Opossum (*Didelphys virginiana*).

R. Hunt, M.D., Ph.D., and D. W. Harrington, M.D.—The Physiology of the Cardiac Nerves of the Opossum (*Didelphys virginiana*).

Notes on the Physiology of the Cardiac Nerves of the Calf.

R. Hunt, M.D., Ph.D., A. Bookman, A.B., and M. J. Tierney, A. B.—Einige allgemeine Eigenschaften des Herzmuskels vom amerikanischen Hummer.

D. W. Harrington, M.D.—On the Physiology of the Cardiac Nerves of the Guinea-Pig.

Professor Lee has been actively engaged upon a translation of M. Verworn's *Allgemeine Physiologie*, which will be published early in the next academic year.

In the Department of Physics and Chemistry instruction has been carried on under the following divisions:

1. Physics and General Chemistry. Lecture course, four hours a week. Professor Chandler.

This course consisted of lectures, illustrated by experiment, on the general properties of matter, heat, light, and electricity; the general principles of chemistry, with a discussion of the chemical elements with their more important compounds. Special attention was paid to all sanitary questions which involve physical and chemical principles, such as the composition of the atmosphere, its relations to plants and animals, the contamination of the atmosphere, and special means to be adopted for the protection of the atmosphere of cities and of dwellings, with special reference to cellar air, sewer gas, and the dangerous gases from stoves and fur-

naces; the chemistry of water, including all the sources of water contamination, means for protecting the water supply, proper disposal of refuse, sub-soil irrigation, etc., and the chemical relations of mould, yeast, and bacteria, in connection with fermentation, putrefaction, etc.

2. Experimental Physics. Laboratory course by Professor Rood, Professor Hallock, Mr. Gordon, Mr. Parker, and Mr. C. C. Trowbridge.

About two hundred students of the first-year class have pursued at the physical laboratory a course of practical instruction in physics, paying special attention to physical measurement, in connection with heat, light, and electricity.

3. Laboratory work in Medical Chemistry, given by Mr. Pellew, assisted by Mr. Tucker, Mr. Van Gelder, and Mr. Müller.

Two hundred and thirty-two students of the first year attended this course, one half during the first half of the session, the other half during the second half. There were also four special students. Two afternoons each week were spent in the laboratory, and two lectures each week were devoted to the necessary theoretical discussions and explanations. Each student prepared and studied experimentally the most important substances found in animals and plants, such as cellulose, starch, dextrine, glucose, maltose, and other sugars; alcohol, fermentation, distillation, yeast; the oils and fats, butter, glycerine; the proteids, etc.; the inorganic constituents of the body, including the most important bases and acids.

Special attention was paid to the examination of water for sanitary purposes.

The most important animal tissues and secretions were studied experimentally; bone, milk including koumyss, blood, bile, etc.; the digestive fluids and artificial digestion; urine, normal and pathological. Particular attention was given to the study of pathological urine, a great variety of specimens being obtained for this purpose from the hospitals.

4. The course in Experimental Toxicology was given to the students of the second year by Mr. Pellew, assisted by

Mr. Tucker, Mr. Jacquish, and Mr. Van Gelder. It was attended by all the regular students of the second year, and also by three special students.

The course consisted of fourteen laboratory exercises and fifteen lectures, and covered the principal organic and inorganic poisons. Particular attention was given in this course to the various tests and reactions that would be used by physicians in the course of their professional practice, as well as those which would be used by professional chemists in the course of toxicological investigation. No quantitative methods of analysis were taught, but the students were thoroughly grounded in all the more important qualitative reactions, and received information which would be of value to them in determining the presence or absence of poison in suspected cases.

In February, 1897, Mr. Pellew delivered four public lectures, in the course of Columbia University Lectures in co-operation with the American Museum of Natural History, on the general subject of Alcohol, its history, its uses, and its dangers, the preparation and properties of the various alcoholic beverages. These lectures were profusely illustrated, and attracted considerable attention in the public press. The first of these lectures, on the history of alcoholic beverages, is being published in the June and July numbers of the *Popular Science Monthly*.

During January, February, and March of this year, Mr. Tucker and Mr. Van Gelder of this Department, under the direction of Mr. Pellew, conducted an interesting series of experiments on the later developments of Electro-Chemistry. They exhibited, at the annual reception of the New York Academy of Sciences for 1897, a large number of rare compounds, such as the carbides of the various metals crystallized silica lime and magnesia, artificial rubies, and the like, made by them in the various varieties of electrical furnaces. At the public meeting of the Microscopical Society, held in the spring of 1897, Mr. Jacquish and Mr. Müller, under the direction of Mr. Pellew, exhibited an interesting series of specimens of tea, coffee, and cocoa, and also of the various

alkaloids and other valuable products derived from them, prepared in this laboratory.

After the session of 1896-97, now closing, the instruction in General Chemistry for students of the first year will be given entirely by the University Department of Chemistry, partly in Havemeyer Hall at the new site, and partly at the building of the College of Physicians and Surgeons. This instruction will consist in illustrated lectures by Professor Pellew, and in conferences and laboratory courses by Dr. Vulté. After a distinguished connection of many years with the Medical School, Professor Chandler, the head of the University Department of Chemistry, will cease, owing to the pressure of other duties, to take part personally in the instruction of the medical students. The instruction in Physics required in the first year of the medical course is hereafter to be given by the University Department of Physics entirely at the new site at 116th Street. This instruction will consist in a course, by Professor Hallock, of lectures, demonstrations, and laboratory work.

During and after the session of 1898-99, instruction in Physiological Chemistry will be given at the College of Physicians and Surgeons as a part of the second, instead of the first, year of the four years' curriculum.

In the Department of Pathology the routine laboratory instruction in practical pathology for the third-year undergraduates has been extended and broadened by a new demonstration course in pathological anatomy conducted by Drs. Hodenpyl and Ely, and by a new special course on the pathology of the nervous system conducted by Dr. Van Gieson. This routine class instruction in Pathology has been given in two sections to one hundred and sixty-two regular, and to three special students.

Eleven men have been engaged through a considerable part of the year in the pursuit of advanced studies and in research in Pathology.

In the course in Bacteriology, instruction has been given in four sections to one hundred and fifty-four undergradu-

ates of the second year. An advanced course in Bacteriology has been given by Dr. Cheesman to five men, two of whom were candidates for a higher university degree. Seven men have been engaged in research work in Bacteriology.

In the regular class in normal histology of the second year, one hundred and fifty-three men in two sections have received practical laboratory instruction. The regular class in normal histology of the first year numbered two hundred and thirty-four men, one of these being a Senior in Columbia College, and two special students. In the Photographic Section, instruction in the technique of photography has been given to three men. During the year between four and five hundred negatives have been made by Dr. Leaming for lantern-slides, for illustrations of original research, etc., at the request and with the co-operation of the professors and instructors in various departments of the University, and of other workers in science.

The whole number of men engaged in practical laboratory work in this Department during the year has been seven hundred and thirty-three.

A large amount of routine and special work in the way of examinations and reports upon specimens from hospitals, dispensaries, and practitioners, has been accomplished during the year by the instructors and assistants in the Department, and valuable additions have been made to the permanent and working collections.

The following papers have been published by workers in this Department since the last report :

*Rowland Godfrey Freeman, M.D.*

"Low Temperature Pasteurization of Milk."

*Pearce Bailey, A.M., M.D., and James Ewing, A.M., M.D.*

"A Contribution to the Study of Acute Ascending (Landry's) Paralysis."

*Henry Heiman, M.D.*

"A Further Study of the Biology of the Gonococcus (Neisser)."

*John Slade Ely, M.D.*

"Bacterial and Allied Tests as Applied to the Clinical Diagnosis of Typhoid Fever."

*Rowland Godfrey Freeman, M.D.*

"Dangers of the Domestic Use, Other than Drinking, of Contaminated Water, with Special Reference to Milk and Oysters as Carriers of Bacteria."

*Timothy Matlack Cheesman, M.D.*

"Common Causes of the Contamination of Drinking-Water."

*Edward Leaming, M.D.*

"Notes on Polychromatic Photo-Micrography."

*Ira Van Gieson, M.D.*

"The Toxic Basis of Neural Diseases."

In the Department of Obstetrics, Professor McLane has given his usual course of didactic lectures, three hours a week, from October to March, to the third-year students. At the close of these lectures, Professor Huntington gave three lectures, illustrated with numerous lantern-slides, upon the anatomy, development, and topography, of the female generative tract. An examination was then held by Professor McLane, with the very gratifying result that not a single third-year student failed to pass with credit.

The second-year students, 155 in number, were tutored throughout the session in Obstetrics and Gynecology by Dr. Tucker. Each student received one hour's tuition a week for twenty weeks in Obstetrics and for six weeks in Gynecology. Satisfactory examinations were held in these subjects at the end of the session. Through the introduction of this course of instruction into the second year by means of recitations and demonstrations the students have undoubtedly done better and more intelligent work in the third year than was possible in the old curriculum. The results of the examination of the third-year men show that already a higher standard has been established.

In the Sloane Maternity Hospital 135 men of the third-year class were on duty for one week each and attended all the confinements which occurred there during that time. These extra privileges to the third-year men were rendered possible by the change in the college curriculum from a three to a four years' course. Four other students received

instruction in Practical Obstetrics and were examined at the close of their course. Dr. Brodhead, having resigned after a service of two years as the Resident Physician and Instructor in Practical Obstetrics, has been succeeded by Dr. Voorhees.

From July 1, 1896, to June 30, 1897, there were 941 confinements in the Sloane Maternity Hospital. Twelve graduates of the college, acting as assistants to the Resident Physician, have each acquired a three months' experience in the practice of obstetrics. Eighteen nurses from the Presbyterian Hospital, seventeen from the New York Hospital, seven from St. Luke's Hospital, three from the Roosevelt Hospital, and ten from various other training-schools, a total of fifty-five nurses, have each received a three months' course of instruction and practical experience in obstetric nursing.

The opening of the new addition to the Sloane Maternity Hospital on April 14th was the most important event of the year in the Department of Obstetrics. This addition, consisting of seven stories and a basement, has been built and fully equipped with modern appliances through the generosity of Mr. William D. Sloane. Mrs. Sloane has also increased the endowment fund of the hospital in order to provide for the increased cost of maintenance. Work has already been begun upon the original hospital building, which is to be enlarged and remodelled throughout so as to add forty or more beds to the seventy-two now in use in the new part, and to provide more room for the house-staff and quarters for the students while they are taking their practical course in the fourth year. A large operating room and amphitheatre with fifty-one seats will permit clinics and demonstrations to be given to a large section of the class at one time. With these increased accommodations and better facilities for teaching students and for taking care of patients, the value of the entire obstetric course will be greatly enhanced.

During by far the larger part of the session of 1896-97, the Professor of Materia Medica and Therapeutics, Dr.

George L. Peabody, was absent from duty while recovering from a grave illness. During his absence the work of his chair was carried on with success by Dr. Henry Arthur Griffin, who had been appointed by the Trustees Lecturer in Materia Medica and Therapeutics to serve during the absence of Professor Peabody.

In the Departments of the Practice of Medicine, of Nervous Diseases, of Gynecology, and of Surgery, the year since the last report has been one of steady and prosperous work at the college and at the hospitals, which calls for no special comment. The same may be said of the more special departments of clinical study, while the facilities are always increasing which are afforded for object teaching in Medicine by the constantly growing service at the Vanderbilt Clinic.

With the coming session of 1897-98, the full development of the four years' curriculum will be attained, and at the end of that session the first class will graduate which entered under that curriculum.

The Faculty of Medicine feels that the hopes with which the new curriculum was entered upon have been abundantly justified already.

Respectfully submitted,

JOHN G. CURTIS, M.D.,

*Acting Dean.*

# SCHOOLS UNDER THE FACULTY OF APPLIED SCIENCE

## REPORT OF THE DEAN

FOR THE ACADEMIC YEAR ENDING JUNE 30, 1897.

*To the President of Columbia University  
in the City of New York :*

SIR :

I have the honor to present the following report of the thirty-third annual session of the Schools under the Faculty of Applied Science, just closed.

During the year three hundred and ninety-seven students have been in attendance on the exercises of the Schools of Applied Science, distributed as follows :

### *Undergraduate Courses.*

Fourth Class.....	59	
Third " .....	84	
Second " .....	86	
First " .....	142	
		<hr/>
		371

### *University Courses.*

For the Degree of Master of Arts.....	5*	
" " " " Doctor of Philosophy.....	1	
		<hr/>
		6

### *Elective Courses.*

Specials.....	22	
(14 of whom pursued Architectural Courses)		
		<hr/>
		22

Grand total.....	399	
Deduct for students pursuing more than one course	2	
		<hr/>
		397

\* Two of this number were also fourth-year students in regular undergraduate courses.

The undergraduate students have pursued the different courses in the Schools of Applied Science, as follows :

	First Class.	Second Class.	Third Class.	Fourth Class.	Total.
Mining Engineering.....	11	14	16	7	48
Civil Engineering.....	22	12	23	15	72
Electrical Engineering.....	53	33	25	26	137
Metallurgy.....	2	0	2	0	4
Chemistry.....	13	6	6	3	28
Architecture.....	41	21	12	8	82
	<hr/> 142	<hr/> 86	<hr/> 84	<hr/> 59	<hr/> 371

Of the above-mentioned students the following number received free tuition :

First Class.....	1*
Second " .....	5†
Third " .....	15†
Fourth " .....	12
Master of Arts.....	1§
Doctor of Philosophy.....	1
	<hr/>

35.

The following is a complete list of the degrees awarded at Commencement in the several courses :

*Undergraduate Courses.*

Mining Engineering.....	6
Civil Engineering.....	15
Electrical Engineering.....	26
Chemistry.....	3
Architecture.....	9
	<hr/>

59

*University Course.*

For the degree of Master of Arts.....	4
	<hr/>
	63

\* Pulitzer Scholarship.

† One Pulitzer Scholarship.

‡ Two paid last year, but did not attend, and the fees were credited on this year's account.

§ Had already paid fees in full.

|| Two of this number also received professional degrees.

The above include the following degrees, which were granted during the year to candidates who failed to comply with all the requirements at last Commencement :

Mining Engineering .....	1
Electrical Engineering.....	1
Chemistry.....	1

3

Graduates of other institutions to the number of fifty-five have been in attendance at the Schools of Applied Science during the past year. The following is a list of the institutions from which they graduated, and the degrees which they have received :

## PARENTAGE OF DEGREES

Amherst College, Amherst, Mass.....	2
Brown University, Providence, R. I.....	1
Case School of Applied Science, Cleveland, Ohio..	1
College of the City of New York.....	6
Columbia College.....	13
Harvard University, Cambridge, Mass.....	6
Johns Hopkins University, Baltimore, Md.....	1
Lehigh University, South Bethlehem, Pa.....	1
Leland Stanford, Jr., University, California.....	1
Mass. Institute of Technology, Boston, Mass.....	1
Otterbein University, Westerville, Ohio.....	1
Penn College, Oskaloosa, Iowa.....	1
Princeton University, Princeton, N. J.....	1
Rensselaer Polytechnic Institute, Troy, N. Y.....	1
Rutgers College, New Brunswick, N. J.....	1
St. Francis Xavier College, New York City.....	1
Shurtleff College, Upper Alton, Ill.....	1
Stevens Institute of Technology, Hoboken, N. J..	1
Trinity College, Hartford, Conn.....	1
Union College, Schenectady, N. Y.....	1
U. S. Military Academy, West Point, N. Y.....	1
Yale University, New Haven, Conn.....	9

*Foreign Countries :*

Polytechnikum, Dresden.....	1
University of Havana, Havana, Cuba.....	2

56

Deduct for student holding more than one degree, 1

55

Number holding degree of A.B.....	32
“ “ “ “ A.M.....	1
“ “ “ “ B.S.....	9
“ “ “ “ C.E.....	4
“ “ “ “ E.M.....	2
“ “ “ “ Mech. Eng.....	2
“ “ “ “ Ph.B.....	5
“ “ “ “ U. S. Military Academy,	1
	<hr/>
	56
Deduct for student holding more than one degree,	1
	<hr/>
	55

## DEPARTMENT OF ARCHITECTURE

There has this year been no change in the instructors in this Department, but the change in the work spoken of in last year's report, by which the instruction in Applied Chemistry and Geology has been replaced by a course in Building Materials, has been carried into effect. This course, like that in Specifications, which it accompanies and illustrates, runs through three years, the three lower classes taking it together. This year Stonework and Masonry were taken up, and besides the lectures given by the staff of the School of Architecture there were lectures in the Geology of Building Stones by Professor Kemp, on Artificial Stones by Professor Ricketts, on Bricks and Brickmaking by Mr. Ries, on the Chemistry of Cements by Dr. Wiechmann. This auxiliary service is thought by Professor Ware to give the Department of Architecture quite as much advantage from its neighborhood to the Departments of Chemistry, Engineering, and Mining as it had when all were component parts of the School of Mines.

This year also, for the first time since its establishment in 1894, the Elective Course in Advanced Architectural Engineering has been in active operation. It was arranged at that time that the disciplinary work of the Department should be substantially completed during the first three years of the course, the work of the fourth year being of the nature of Post-Graduate work, the men having the option of giving their time to History and Design or to Construction and

Practice. Hitherto they have all chosen the former. But this year a very good beginning has been made in the work of training an Architectural Engineer, who shall be as good an engineer as the Civil, Mining, Mechanical, or Electrical Engineers who take their degrees under the Faculty of Applied Science. In this we are promised the hearty coöperation of the professors in the other schools.

This year also a graduate in Civil Engineering of the Massachusetts Institute of Technology of ten years' standing has taken his degree of Master of Arts in the School of Architecture.

The total number of courses given in the School of Architecture this year was nineteen. One of these was taken by a senior in the College, and two by the candidate for the degree of Master of Arts.

#### DEPARTMENT OF ASTRONOMY

There has been no change in the regular staff of this Department during the past year. The Assistants in the Summer School of Practical Geodesy for the summer of 1896 were as follows: George H. Ling, Ph.D.; Charles Derleth, C.E.; Walter C. Kretz, A.B.; and Charles Rodenberg, C.E.

The regular courses of instruction to the students in Civil Engineering were given as usual. The Summer School in Practical Geodesy was in session from June 1st to July 11th. Twenty students were in attendance. A portion of the time was spent in the field at Lake Sunapee, New Hampshire, under the direction of Professor Rees and Professor Jacoby, assisted by Charles Derleth and Charles Rodenberg. The work in the observatory in New York was under the direction of Dr. H. S. Davis, assisted by Dr. Ling and W. C. Kretz.

#### DEPARTMENT OF BOTANY

During the first term the students of the first year to the number of thirty-five, comprising those in the courses of Mining Engineering, Civil Engineering, Sanitary Engineering, and Chemistry, attended lectures in Botany twice a

week, given by Professor Underwood. It is strongly recommended that at the New Site a certain amount of laboratory work be combined with lectures, as a part of the regular instruction, and that instruction be continued throughout the entire year, as two hours per week during one term is not sufficient time to give more than an outline of the subject.

#### DEPARTMENT OF CHEMISTRY

No changes were made in the instructors in this Department during the past year. All the regular courses of instruction in General, Inorganic, Organic, Analytical, and Applied Chemistry were given this year. The number of students working in the laboratories has continued to be unusually large, chiefly owing to the large number of students who have elected the course in Electrical Engineering. The lectures in General Chemistry have been given in duplicate by Professor Chandler, as the lecture-room was not large enough to accommodate more than one half of the students attending these lectures. During the latter part of the year, in view of the greatly increased laboratory facilities which will be offered in Havemeyer Hall at the New Site, the entire system of Chemical Instruction has been carefully considered and revised, and it has been decided that in future the School of Chemistry shall offer three parallel courses for the degree of Bachelor of Science :

Course A, Analytical Chemistry,

Course B, Industrial Chemistry,

Course C, Organic Chemistry.

The subjects to be taught are very much the same in the three courses, but special attention is devoted in each course to that branch of Chemistry which characterizes it. The courses of instruction will include not only all branches of Theoretical, Analytical, and Industrial Chemistry, but also other collateral sciences which have been found by experience to be required by the professional chemist, such as Mathematics, Physics, Crystallography, Mineralogy, Microscopy, Bacteriology, and Metallurgy. In order to enable the students of these three parallel courses to pursue with

advantage the modern Mathematical and Physical Chemistry, there have been added to these courses Analytical Geometry and the Calculus, Theoretical Mechanics, Elementary Thermodynamics, and Electro-Chemistry; special attention will be paid to Physical Chemistry, and a special laboratory has been set apart for the purpose of giving practical instruction in this subject.

There will also be provided at the New Site a commodious laboratory for Industrial Chemistry equipped with all the necessary apparatus and machinery for practising industrial operations on a sufficient scale to enable students to become practically familiar with the most important applications of Industrial Chemistry. This laboratory will be under the special charge of Adjunct-Professor Charles E. Pellew, E.M., assisted by Samuel A. Tucker, Ph.B., Tutor in Industrial Chemistry.

During the past year valuable additions were made to the Museum of Chemistry: for example, a beautiful collection of optical glass both in the rough and in polished blocks, from the establishment of M. Mantois, of Paris; specimens illustrating photo-mechanical processes from Adolf Braun and Co., of Dornach, in Alsace; specimens illustrating the manufacture of glass for artificial gems; specimens and models illustrating natural and artificial silk; specimens illustrating the occurrence of thorium and the like.

#### DEPARTMENT OF CIVIL ENGINEERING

The general features of the work in the Department of Civil Engineering during the past year indicate substantial development along lines laid down in the two or three preceding years rather than any wholly new departure. The material reconstruction of those years has completed the outlines of the department about as they will probably remain for some time to come. There are yet to be developed, on the other hand, many subjects and special matters covered by the Department, and much work of this nature has been done throughout the year just closed.

The subject of Roads and Pavements has been materially

extended in its scope both in the wider range of its lecture matter and in its bearings on actual construction. It is a subject of rapidly growing importance and is constantly attracting wider and more intelligent attention. Improved country roads and better city pavements are being required at the hands of Civil Engineers and special efforts are being made in the Department to keep its work in this direction quite abreast of such demands. A collection of materials, actual sections of pavements and working appliances is now being made, and it is hoped that facilities in other directions will soon be materially increased.

The third-year work in the theory of railroad location has been substantially extended in the more advanced portions of the subject so that the efficiency of the field practice of the Summer School of Surveying will be correspondingly enhanced. The improvements outlined for the hydrographic survey a year ago have been realized in the work of this year. The survey was made in the latter part of May on the Harlem Ship Canal and on adjoining stretches of the Harlem River. The operations included both the hydrographic survey of portions of the river and canal as well as the determinations of discharge and of gauging by the use of current meter and tide gauge.

During the year the hydraulic laboratory has also been brought so nearly to completion that it has been used by all the fourth-year students of the Department. Exercises in the complete practical operations of weir measurements, gaugings of the flow in open channels, determination of the friction in open channels, observations with the hook gauge, the testing of water meters, and other related investigations have been conducted by students in the Departments of Civil Engineering and Mining. Provisions are now made under which students hereafter will have practical exercises connected with the discharge through various orifices and friction in closed pipes as well as other hydraulic work.

The thesis work of the graduating class has appreciably been advanced. A high grade in the work of structural design has been attained and some original investigations of

marked excellence have been made. The course in Sanitary Engineering yet remains incomplete in a few of its details, but it is hoped that within a year it may be fully established. The number of inquiries which have been made regarding this course of study show a substantial demand for the special professional preparation which it would afford.

#### DEPARTMENT OF ELECTRICAL ENGINEERING

There has been no change in the personnel of the Department during the year.

The number of graduation theses is unusually large this year, twenty-seven degrees in Electrical Engineering being granted at Commencement. The standard of the theses is also high, many of them being of exceptional interest and value. Two of this year's theses are to be read as papers before the July meeting of the American Institute of Electrical Engineers, and several others are to be published in the electrical journals.

A series of ten articles by Professor Crocker on "The Principles of Electrical Distribution" appeared in *The Electrical World*, December 19, 1896, to February 20, 1897, and also in *The School of Mines Quarterly*, Volume XVIII., Numbers 2, 3, and 4. These were used by the third and fourth year students in connection with the lectures on Electric Lighting and Electric Power.

Professor Crocker was elected president of the American Institute of Electrical Engineers at the annual meeting in May. He also served as chairman of the Committee on Code of the National Conference on Standard Electrical Rules. The result of the work of this Conference has been the formulation of one National Electrical Code to take the place of the many conflicting sets of rules which have been used in connection with electrical work by the various engineering, insurance, and municipal authorities throughout the country.

During the year the officers of the Department have visited with the students many of the electric-lighting and railway stations and other electrical establishments in and about

New York City, where the latest and most important examples of electrical progress are to be found.

#### DEPARTMENT OF MECHANICAL ENGINEERING

There are three groups in the work of this Department : the mechanical drawing of the first two years for all the Engineering courses and the advanced designing for the Electrical Engineers ; the class-room assignments in properties of materials, heat and heat engines, motors, boilers, and machinery ; and the instruction in the mechanical laboratories in materials, and the work of investigation connected with theses for graduation.

The work in the drawing-rooms has been conducted by Instructor R. E. Mayer and Assistant Thomas H. Harrington. Certain work hitherto done in the third year has been transferred to the second year with advantage, and part of the third-year work has been transferred from Instructor Woolson to Mr. Mayer. A high standard of quality has been attained among many of the draftsmen.

The class-room exercises have been this year much improved by the use of the projection lantern, using the electric arc light in a room which does not have to be darkened. The lantern-slide is so brilliantly illuminated that the screen can be used as a diagram, and notes and drawings made from the projected illustration. There have been no considerable changes in the course of instruction as given last year beyond those resulting from the introduction of Professor Hutton's recent work, *Mechanical Engineering of Power Plants*, as a text-book in the second and third years of the Electrical Engineering course, and the third and fourth years of the Civil and Mining courses. Professor Hutton has also lectured to the third class on properties of materials, and to the fourth class on motors, steam-engines, and boilers, and on heat and its applications to motors. Instructor Woolson has given instruction in mechanism and transmissive machinery to all courses except Mining.

In the third group, the laboratory instruction has been chiefly in the hands of Mr. Woolson, instructor, and Mr. L. E. Gregory, assistant. The engineering students have been given a laboratory course in the testing of wood, iron, and steel for compressive and tensile resistance, thereby becoming familiar with these materials of construction and with the machines for testing them. They have used the best forms of apparatus for measuring behavior under strain, and have been instructed in the processes for verification of formulæ, etc. The usual experimental course with the steam-engine indicator has been provided, and will be much extended in another year. In addition to this, certain students of the graduating class have been assigned to original research for their theses at graduation, using the apparatus of the laboratory for this purpose. Topics of this year have been: the economy and efficiency of a gas engine for electric lighting; the efficiency of a steam turbine, including tests of the consumption of steam at various degrees of expansion; tests of a Hornsby-Akroyd oil engine for efficiency and economy; the friction of roller-bearings at various speeds; the transverse strength of blue-stone in lintels; the effect of varying proportions of water used in cement mixtures, and other work incidental to theses in other courses. These researches have been most faithfully pursued and have been very interesting. They will be continued. Most interesting thesis work has also been done in this Department outside of the laboratory, including exhaustive tests of actual plants in operation with full report, and calibration of all apparatus. It is intended next year to add considerably to the laboratory courses, as the more extended facilities of the New Site of the University may permit.

The additions to the equipment of the Department this year have been :

By purchase :

A 10-horse-power Otto gas engine with appliances; extensometers, steam and test gauges and other exact appa-

ratus; a Hornsby-Akroyd oil engine; a Barrus calorimeter; an historic engine, the first in this country to be driven by the now usual shaft-governor; photographs and slides.

By gift :

Bilgram's model cut-gear; sectional model of consolidated pop safety-valve; a fifteen-horse-power Otto gas engine, the gift of Mr. Samuel D. Coykendall; samples of roller-bearings; fixtures for a blue-print frame, from Mr. W. H. Sargent; a Sellers re-starting injector; and certain gifts of money, among which are \$1000 from Mrs. Margaret B. Edson, \$250 from the De La Vergne Refrigerating Co., and \$100 from a private source.

The Department has also received promises of gifts which are to take effect when the University moves to its New Site. Among these are the superb gifts of equipment of the Henry R. Worthington Hydraulic Section of the Mechanical Laboratories, including triple steam and duplex pumps, measuring and calibrating tanks, steam-engine condenser, accumulators, meters, gauges, weirs, orifices, and other valuable appliances, aggregating over \$15,000; the Builders' Iron Foundry gives an eight-inch Venturi meter; the Morris Machine Co. of Baldwinsville, N. Y., give a centrifugal pump with its independent driving engine; the Lawrence Machine Co. give a centrifugal pump with a five-inch delivery; the Rife Hydraulic Engine Co. present one of their improved engines; the Douglas Mfg. Co. of Middletown, Conn., give a standard hydraulic ram and a specially made model of one; the Ingersoll-Sargeant Drill Co. present one of their standard duplex steam and compressed air compressors as an experimental steam engine; the Ashcroft Gauge Co. present the appliances to erect a mercury test-column of one hundred feet in height; the Yale and Towne Co. present a triple-gearred hoisting appliance with five tons capacity; and there are other and considerable gifts in prospect whose detail is not yet in a condition to announce. More than this, the hydraulic elevator of the Engineering Building, a gift to the University by its builders, the Otis Elevator Co., and

the ventilating appliances of the Mechanical Laboratory, the joint gift of Messrs. Sheff, Suter, and Sturtevant, are to be made into special equipment for the mechanical laboratory by means of fittings, fixtures, and calibrating appliances whereby much most interesting and valuable research can be made by Mechanical Engineering students in future years.

The vacation class in Mechanical Engineering has included a three-days' trip to the works of the Bethlehem Iron and Steel Company.

By recommendation of the Faculty, a four-years' course leading to the degree of Mechanical Engineer has been established by the Trustees to begin in 1897 on the removal to the New Site of the University.

#### \* DEPARTMENT OF GEOLOGY

There have been no changes in the personnel of the Department during the past year.

To the second-year students in the courses of Mining and of Metallurgy, a special course of lectures was given twice a week during the second session, on petrography, by Professor Kemp.

To the third-year students in the courses of Mining Engineering, Civil Engineering, Sanitary Engineering, Metallurgy, and Analytical and Applied Chemistry a course of lectures on general Geology was given three times a week through the year by Professor Kemp.

To the fourth-year students in the courses of Mining Engineering, Metallurgy, and Analytical and Applied Chemistry, a course of lectures on Economic Geology was given by Professor Kemp three times a week throughout the year.

At the close of the examinations in the summer of 1896, Professor Kemp accompanied the students of the Summer School of Mining and Geology, stopping at Lockport, Niagara Falls, the quarries of Chicago, the Leucite Hills in the Bad Lands of Wyoming, and travelling on to Butte, Montana, where he spent a week with the class studying the geology of this vicinity.

## DEPARTMENT OF MATHEMATICS

The educational staff of the Department; the university courses of instruction given and attendance at each; the work of the fellow or fellows; researches and publications of the Department; miscellaneous items of interest; and the number of collegiate and other courses, not herein referred to, given during the year, have all been stated in the report of the Department of the Dean of the Faculty of Pure Science.

The students of the first class in all the schools, except the School of Architecture, have been taught by Dr. Chittenden, Instructor, during the absence of Instructor Maclay, on leave. The students attended four exercises a week. The subjects taught were—trigonometry, analytical and spherical; mensuration of surfaces and volumes; so much of algebra as is not required for admission; and analytical geometry through the hyperbola.

It is a matter of regret that this class, which has become large, could not be subdivided into sections, for convenience and thoroughness of teaching. Dr. Chittenden obtained excellent results, but at the expense of great labor both on his part and that of the students. Removal to the New Site, with the increased accommodations there, will render possible a division of the class into three sections.

Analytical geometry from loci of the second order, and the differential calculus, were taught, four hours a week, by Professor Van Amringe to the students of the second class in all the Schools except those of Chemistry and Architecture.

The several courses in Mathematics as set forth in the circular of information have been fully accomplished.

## DEPARTMENT OF MECHANICS

The teaching staff of the Department of Mechanics has been the same during the present academic year as specified in my report for the year 1895-6. Instruction under the Faculty of Applied Science has been given by Professors

Woodward and Pupin and by Mr. William H. Freedman. The services of Mr. Joseph C. Pfister have been given wholly to the College and to the School of Pure Science.

The courses given in the Schools of Applied Science during the year, the instructors conducting them, and the number of students attending each course, are given below, the numerals assigned to the courses being those of the last annual catalogue of the University.

Course I. Analytical Mechanics, three hours per week throughout the year, by Professor Woodward; 68 students.

Course IV. Thermodynamics, three hours per week, first half year, by Professor Pupin; 54 students.

Course VI. Theory of the Dynamo and Motor, three hours per week, first half year, by Professor Pupin and Mr. Freedman; 27 students.

Course VII. Theory of Direct-Current Dynamo and Motor, three hours per week, second half year, by Professor Pupin and Mr. Freedman; 27 students.

Course VIII. Theory of Alternators and Transformers, three hours per week, first half year, by Professor Pupin; 31 students.

Course IX. Theory of Variable Currents, three hours per week, second half year, by Professor Pupin; 31 students.

In addition to the work of Courses VI and VII of the Department of Mechanics in which Mr. Freedman has taken part, he has also participated in the work of Courses VI, VII, and XII of the Department of Electrical Engineering.

The work of the year has been on the whole very gratifying to the instructors of the Department. The standing attained by the different classes of students has been somewhat above the average, while many individuals have reached an exceptionally high grade of scholarship.

Several students have taken advantage of the opportunities afforded by the electrical laboratory of the Department for advanced work, especially in connection with the preparation of their graduating theses. Of these students mention may be made of Messrs. Adams and Collins, who investigated the effect of capacity upon the current phases of an iron

core transformer ; of Messrs. Crampton and Holbrook, who studied alternating current distortions, due to iron in transformers and to dielectrics in condensers ; and of Messrs. Clark and McMullen, who investigated a new method of measuring the rise of current in a short circuited dynamo.

#### MICROSCOPY AND MICROBIOLOGY

Instruction in these subjects is given by Dr. A. A. Julien, with the assistance of Miss A. McEvoy, who devotes special attention to the preparation of the apparatus, materials, culture media, preparation of lantern-slides, and the like.

The students in the course of Chemistry of the second year have received their usual instruction in microscopy, covering the use and general technique of the microscope, the principal processes of preparation of mounts for microscopical examination, and practical application of the microscope to food, textile fabrics, paper and handwriting, the manipulation in micro-chemistry, micro-toxicology and the examination of blood stains. The members of this class also voluntarily took part with great enthusiasm and profit in a special exhibit at the Annual Microscopical Exhibition of the New York Microscopical Society at the American Museum of Natural History in May.

The students of the third year in Chemistry have pursued the course in microbiology, including photo-micrography, paying particular attention to micro-organisms, yeasts, mould, bacteria, etc., giving the greater part of their attention to the water bacteria, isolating, cultivating, and identifying several species found in the Croton water.

At the special request of third-year students in the course of Civil Engineering, Dr. Julien gave a course of lectures, accompanied by practical laboratory work, especially adapted to the wants of Civil Engineers. This course included principles of the microscope and its use, with methods of mounting ; micrometry ; also a study of the geological origin, forms, sizes, mineral constituents of sand grains, with special reference to their use in water filtration. Also a short course in bacteriology with particular reference to the water bacteria

and the general micro-flora and fauna of potable waters. Twenty students attended these courses, manifested great interest and did a large amount of satisfactory work.

#### DEPARTMENT OF MINERALOGY AND METALLURGY

The teaching staff of the Department during the year 1896-97, consisted of Professor Egleston, Professor Moses, Dr. Struthers, Dr. Luquer, Mr. Whitlock and Dr. McIlhiney.

After the resignation of Dr. Egleston, Mr. H. M. Howe and Mr. W. B. Devereux were called to deliver special lectures in Metallurgy.

Dr. Egleston, the head of the Department for thirty-three years, resigned from active duty in December, 1896, and since that date lectures in general metallurgy have been delivered by Dr. Struthers. Professor Henry M. Howe delivered a series of eight lectures on steel, and Mr. W. B. Devereux, School of Mines, class of 1878, gave six lectures on economical points in general metallurgical practice in the West.

After June 30th, 1897, the Department of Mineralogy and Metallurgy will be divided into the Department of Mineralogy, under the charge of Professor Moses, with rooms in the Schermerhorn Building; and the Department of Metallurgy, under the charge of Professor Henry M. Howe, with rooms in the Havemeyer Building.

The courses of instruction as set forth in the circulars of information have been carried out. In the new course of Organic Chemistry the subject Physical Crystallography has been made a part of the undergraduate work.

The publications in mineralogy, the improvements in equipment and the radical changes in the mineral collection are described in the report to the Dean of Pure Science. In metallurgy Dr. Struthers has published metallurgy abstracts and references during the year 1896. Reviews, *Matte Smelting*, by H. Lang. *Metals, their Properties and Treatment*, Huntington and McMillan. *Problems and Questions in Physics*, Matthews and Shearer. *Gases of the Atmosphere*, William Ramsey.

Dr. McIlhiney has continued the investigation of the solubility of gold and the physical conditions of silicates at high temperatures. The results will shortly be published.

The Summer School in Practical Metallurgy in charge of Dr. Struthers met in July, at Butte, Montana, and studied the smelting of the silver and copper ores of that district. It is gratifying to note that, while optional, a full attendance was duly recorded.

In March the students of the fourth class taking the subject of metallurgy under charge of Dr. Struthers visited the copper smelting works of the Nichols Chemical Company, at Laurel Hill, N. Y. In April the same students visited the lead and copper works of the Guggenheim Smelting and Refining Company, near Perth Amboy, N. J.

It is to be hoped that the appreciation, shown by the full attendance at these optional trips, may be considered good ground for their establishment on a permanent basis in the near future.

#### DEPARTMENT OF MINING

Professor Munroe and Adjunct Professor Peele have been assisted in the work of this Department during the past year by Edwin C. Holden, E.M.; J. Parke Channing, E.M.; and Edward B. Durham, E.M.

The customary courses of instruction have been given. The Summer School in practical mining during the summer of 1896 was held in the copper and silver mining district of Butte, Montana. After completing the regular detail work in the Gagnon and Nettie mines, the class visited the Parrot, Anaconda, Silver Bow and Rarus mines; also the larger concentration works and silver amalgamating mills in the vicinity of Butte.

The work of the Mining School was preceded by a week's field geology and followed by a week devoted to the study of copper and silver smelting. During the present summer (1897), the Summer School will be held in the Lake Superior iron region, with headquarters at Ishpeming, Michigan.

Through the liberality of Mr. F. Augustus Schermerhorn, a large sectional model of a metal mine has been constructed for the Mining Museum at the New Site. The model illustrates fully and clearly the method of mining as followed in the West, showing all ordinary details of underground work, shaft sinking, drifting, underhand and overhand stoping, timbering of shafts, levels and stopes, handling of ore in the working places, underground haulage and hoisting of ore and mine drainage.

Mr. Frank C. Hooper, E.M., 1890, has been engaged during the winter in elaborating plans for the new ore-dressing laboratories. Mr. Hooper has accepted the position of assistant in mining for the coming year and will have charge of the new laboratories, where his practical experience in the design, construction, and operation of concentration works will be especially useful. Mr. Hooper will also divide with Professor Peele the supervision of the design of mine plants by students of the fourth year.

#### DEPARTMENT OF PHYSICS

The only change in the personnel of the Department was occasioned by the resignation of Asa S. Iglehart, Assistant, and the appointment of Dana C. Wells, E.E., a graduate of the School of Engineering of the class of 1896.

The following lecture courses were attended by all the students under the Faculty of Applied Science except those in the School of Architecture:

To the first-year students, Sound and Heat, Light and Electricity.

To the second-year students, Electricity and Exact Electrical Measurements with laboratory practice in all branches of Physics.

Optional courses were also given as follows:

Modes of Constructing and Designing Apparatus, Professor Hallock.

Comparison of Electrical Methods, Mr. Parker.

## CONCLUSION

The work of the students in all the Schools of Applied Science has been extremely satisfactory. Great zeal and industry have been manifested by the majority of the students and the examinations have generally proved very creditable.

Respectfully,

C. F. CHANDLER,

*Dean.*

# SCHOOL OF POLITICAL SCIENCE

## REPORT OF THE DEAN

FOR THE ACADEMIC YEAR ENDING JUNE 30, 1897.

*To the President of Columbia University  
in the City of New York :*

SIR :

I have the honor to submit the following report of the work of the Faculty of Political Science for the scholastic year 1896-97. During the year, 366 students have taken courses of instruction under the Faculty of Political Science. Of these, 221 were also registered in the Law School, 24 in the School of Philosophy, 1 in the School of Pure Science, 52 were members of the College, and 12 pursued studies in the Union Theological Seminary. Of the 366 students in the School of Political Science, 194 held college degrees on entrance into the School, and 52 had completed the Junior year of College.

Of the 194 students holding college degrees upon entrance into the School,

143	had the degree of Bachelor of Arts.
21	" " " " " " Science.
17	" " " " " " Philosophy.
3	" " " " " " Letters.
5	" " " " " " Divinity.
5	" " " " " " Laws.
23	" " " " " Master Arts.
1	" " " " " " Science.
2	" " " " " " Pharmacy.
2	" " " " " Doctor Philosophy.
1	" " " " " " Medicine.
1	" " " " " Electrical Engineer.
1	" " " " " Bachelor of Education.

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Deduct	225	
	31	for students holding more than one degree.

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194

Students in the School received their degree, or degrees, from the following institutions:

Adelbert College.....	2
Albion College.....	1
Alma College.....	1
Amherst College.....	5
Bethel College.....	1
Bowdoin College.....	2
Brown University.....	3
Bucknell College.....	1
Center College.....	2
Colby College.....	1
Colgate University.....	1
College of the City of New York.....	21
Columbia University.....	31
Cornell College, Iowa.....	1
Cornell University.....	2
Cumberland University.....	4
Emory and Henry College.....	1
Franklin and Marshall College.....	3
Gammon Theological Seminary.....	1
General Theological Seminary.....	1
Hamilton College.....	2
Hanover College.....	1
Harvard University.....	21
Haverford College.....	1
Hobart College.....	1
Holy Cross College.....	1
Indiana State University.....	1
Johns Hopkins University.....	3
Kenyon College.....	1
Keystone Normal School.....	1
Lafayette College.....	1
Leland Stanford University.....	4
Lenox College.....	1
Manhattan College.....	2
Marietta College.....	1
Massachusetts Institute of Technology.....	2
Michigan Agricultural College.....	1
National Normal School.....	1
National University Law School.....	1
New York University.....	5
Niagara University.....	1
Northwestern University.....	1
Oberlin College.....	1
Ohio Wesleyan University.....	1
Olivet College.....	2

Oregon State University.....	1
Polytechnic Institute of Brooklyn.....	3
Pomona College.....	1
Princeton University.....	4
Rutgers College.....	3
Seton Hall College.....	1
South Kansas College.....	1
State University of Iowa.....	1
St. Francis Xavier College.....	4
St. John's College, Fordham.....	1
Swarthmore College.....	1
Syracuse University.....	1
Trinity University, Texas.....	2
Union College.....	1
University of California.....	3
University of Chicago.....	1
University of Cincinnati.....	1
University of Havana.....	1
University of Michigan.....	6
University of Minnesota.....	2
University of New Orleans.....	1
University of Rochester.....	1
University of Tennessee.....	2
University of Vermont.....	1
University of Virginia.....	1
University of Wisconsin.....	1
Upper Iowa University.....	1
Vanderbilt University.....	1
Wabash College.....	1
Washburn College.....	1
Washington University.....	1
Wesleyan University, Conn.....	2
Western Reserve University.....	1
Williams College.....	4
Wittenberg College, Ohio.....	1
Witworth College.....	1
Wooster University.....	1
Yale University.....	21

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Total number of degrees..... 225

Inasmuch as we have at Columbia made the beginning of the Senior year the commencement of the University work, we must add to the 194 students having degrees, the 52 other students who have completed the Junior year. There are, then, 246 University students in full standing, who are doing work under the Faculty of Political Science.

## COURSES OF INSTRUCTION.

## GROUP I.—HISTORY AND POLITICAL THEORY.

*A.—European History.*

Instructor.	Courses.	Hours per Week.	Total Number of Students.
Prof. Robinson....	1. The Middle Ages and the Renaissance.....	1st half-year 2	13
Prof. Robinson....	2. The Reformation. ....	2d half-year 2	13
Prof. Robinson....	3. French History. 16th and 17th Century.....	1st half-year 2	5
Prof. Robinson....	4. Ancient Régime.....	2d half-year 2	6
Prof. Robinson....	5. Seminar in European History.....	2	7
Prof. Osgood.....	6. Constitutional History of England.....	2	30
Mr. Beer.....	7. The French Monarchy.	2d half-year 2	10

*B.—American History.*

Prof. Burgess.....	1. Constitutional History of the United States..	2	35
Prof. Osgood.....	2. Political History of the Colonies and of the American Nation.....	1	6
Prof. Osgood.....	3. Preliminary Seminar in American History....	1	9
Prof. Dunning.....	4. Civil War and Reconstruction.....	2d half-year 2	16
Mr. Kelley.....	5. Municipal Politics....	1st half-year 2	6
Dr. Bancroft.....	6. Political History of the United States.....	1st half-year 2	12

*C.—Political Theory.*

Prof. Dunning.....	1. General History of Political Theories.....	2	31
Prof. Dunning.....	2. American Political Philosophy.....	1	7
Prof. Dunning.....	3. Seminar in Political Philosophy.....	1½	4

## GROUP II.—PUBLIC LAW AND COMPARATIVE JURISPRUDENCE.

*A.—Constitutional Law.*

Instructor.	Courses.	Hours per Week.	Total Number of Students.
Prof. Burgess.....	1. Comparative Constitutional Law of the Principal European States and of the United States.....	2	20
Prof. Burgess.....	2. Seminar in Comparative Constitutional Law.....	2	17

*B.—International Law.*

Prof. Moore.....	1. History of Diplomacy.	2	5
Prof. Moore.....	2. International Law....	2	15
Prof. Moore.....	3. Seminar in Diplomacy and International Law.	2	2

*C.—Criminal Law.*

Prof. Moore.....	1. Criminal Law, including the Conflict of Penal Laws and Extradition....	4	184
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*D.—Administrative Law.*

Prof. Goodnow....	1. Comparative Administrative Law of the United States and Principal European States.....	2	15
Prof. Goodnow....	2. Seminar in Administrative Law.....	1	8
Prof. Goodnow....	3. The Law of Municipal Corporations.....	2	5
Prof. Goodnow....	4. The Law of Taxation.	2	5

*D.—Roman Law and Comparative Jurisprudence.*

Prof. Munroe-Smith.	1. International Private Law.....	1	11
Prof. Munroe-Smith.	2. Comparative Jurisprudence.....	2	4
Prof. Munroe-Smith.	3. Roman Law I.....	2	4
Prof. Munroe-Smith.	4. Roman Law II.....	2	2
Prof. Munroe-Smith.	5. Seminar in Legal History.....	1	3

## GROUP III.—ECONOMICS AND SOCIAL SCIENCE.

*A.—Political Economy and Finance.*

Instructor.	Courses.	Hours per Week.	Total Number of Students.
Prof. Mayo-Smith..	1. Historical and Practical Political Economy.	3	54
Prof. Seligman.....	2. History of Political Economy.....	2	29
Prof. Seligman.....	3. Taxation and Finance.	2	42
Prof. Clark.....	4. Economic Theory....	2	11
Prof. Seligman.....	5. Seminar in Political Economy and Finance,	2 hours fortnightly	14
Prof. Clark.....	6. Seminar in Economic Theory.....	7 meetings	10

*B.—Sociology and Statistics.*

Prof. Mayo-Smith..	1. Statistics and Sociology.....	1st half-year	
		2	20
Prof. Mayo-Smith..	2. Statistics and Economics.....	2d half-year	
		2	21
Prof. Giddings.....	3. General Sociology....	1st half-year	
		2	45
Prof. Giddings.....	4. Crime and Penology..	2	31
Prof. Giddings.....	5. Sociological Laws....	2d half-year	
		2	45
Prof. Giddings.....	6. Seminar in Sociology..	17 meetings	17
Prof. Mayo-Smith..	Statistical Laboratory and Seminar.....	2 hours fortnightly	11
Prof. Giddings.....	7. Pauperism, Poor Laws, Charity.....	1st half-year	
		2	31
Dr. Ripley.....	8. Ethnology and Anthropology.....	1st half-year	
		2	15

## SEMINAR IN EUROPEAN HISTORY.

Professor Robinson. 2 hours every other week. 7 members.

The first part of the year was devoted to a study of the Mediæval Inquisition in its various phases. A contemporaneous manual, Bernard of Guis, *Practica Inquisitionis Heretice Pravitatis*, was read and discussed by the class. The latter part of the year was spent upon Theoderic of Nyenis, His-

tory of the Great Schism of the 14th Century, *De Scismate, Libri tres*. The class read also Bernheim's *Lehrbuch der Historischen Methode*.

Members: Messrs. Conway, Barrows, Gabriel, Dennis, Shepherd, and Bevan.

#### PRELIMINARY SEMINAR IN AMERICAN HISTORY.

Professor Osgood. 1 hour a week. 9 members.

##### PAPERS.

Early Settlements in New England.....	H. A. Knox.
John Winthrop and the Settlement of Massachusetts .....	E. P. Tanner.
Captain John Smith and the Settlement of Virginia .....	H. C. Murray.
Roger Williams and the Settlement of Rhode Island .....	J. H. Lyon.
The Dutch on the Hudson and Delaware...	Oscar W. Ehrhorn.
The Baltimore Family and the Settlement of Maryland .....	James T. Lee.
The Settlement of the Carolinas.....	G. C. Tarber.
The Penn Family and the Settlement of Pennsylvania.....	Lester Inglis.
The English in New York, 1664-90 .....	Oscar Wagner.

#### SEMINAR IN POLITICAL THEORIES.

Professor Dunning. 1½ hours a week. 4 members.

The work for the year was the examination and discussion of the theories developed in opposition to those of the French Revolutionists. The topics worked up by the individual members were as follows:

Haller's Restauration der Staatswissenschaft....	Mr. Merriam.
The Political Theory of Joseph de Maistre.....	Mr. Hudson.
The Political Ideas of Edmund Burke .....	Mr. Bayles.
Bentham's Political Philosophy.....	Mr. Franc.

#### SEMINAR IN COMPARATIVE CONSTITUTIONAL LAW.

Professor Burgess. 1 hour a week. 17 members.

The work of the Seminar has been the study of the judicial interpretation of the several provisions of the Fourteenth

Amendment of the Constitution of the United States. All of the following gentlemen have participated in this work, through private study, discussions in the Seminar, and the presentation of papers and criticisms:

B. Alexander,	L. L. McLaughlin,
D. Cohn,	L. J. Obermaier,
M. Cohn,	A. C. Rowe,
H. R. Elias,	C. M. L. Sites,
S. F. Krafft,	B. H. Stern,
I. Lehman,	H. F. Stone,
F. M. Livingston,	A. K. Wing,
M. R. Maltbie,	C. C. H. Zillman.
B. E. Merriam,	

#### SEMINAR IN DIPLOMACY AND INTERNATIONAL LAW.

Professor Moore. 1 hour a week. 2 members.

Mr. Francis R. Stark, Fellow in International Law, has completed a study of the subject of Privateering and the Declaration of Paris. Mr. Neal made some investigations into the origin of the United States Neutrality Laws.

#### SEMINAR IN ADMINISTRATIVE LAW.

Professor Goodnow. 1 hour a week. 8 members.

Subject of investigation, "Centralization of State Administration in the United States."

The following students read papers, some of which occupied a number of sessions of the Seminar:

Recent Centralizing Tendencies in State Educational Administration.....	W. C. Webster.
Centralization of the English Educational Administration.....	M. R. Maltbie.
Centralization of Quarantine Administration in the United States.....	A. Werdenschlag.
Centralization of Sanitary Administration in the United States.....	W. C. Webster.
State Control of Municipal Finances of the United States.....	W. H. King.
Centralization of Excise Administration in the United States.....	C. M. L. Sites.

## SEMINAR IN LEGAL HISTORY.

Professor Munroe-Smith. 1 hour a week. 3 members.

The Seminar in Legal History has met weekly through the year, and has been engaged in reading titles of the Digest of Justinian, of Bracton's *De Legibus Angliæ*, and of the French and German civil codes. The titles selected deal with the acquisition of property rights. The Seminar has been regularly attended by three students, Messrs. Bates, Emerick, and Hildreth. Mr. Hildreth presented a preliminary study on the French jury system.

## SEMINAR IN POLITICAL ECONOMY AND FINANCE.

Professor Seligman. Fortnightly. 14 members.

Meetings of the Seminar in Political Economy and Finance have been held regularly every two weeks throughout the year, and have been attended by the following gentlemen :

Messrs. Baese, Duggan, Emerick, Hall, Hartranft, Howard, King, Maltbie, Moore, Stone, Weber, Wilcox, Neal, and Edgerton. At each session, a member of the Seminar made a critical report of the periodical literature during the past year, as contained in the scientific magazines of various countries. There were taken up in turn America, England, Germany, France, Italy, and Russia. During the first term the subjects of discussion were the Theory of the Income Tax and the Various Phases of the Legislative History and Practical Application of Income Taxation throughout the World. Papers were read by Messrs. Hall, Moore, Stone, Duggan, and King.

In the second term the subject under discussion was the Theory of Railway Rates; the General Relation of Government to Railways, both here and abroad. Papers were read by Messrs. Howard, Weber, Neal, Wilcox, Emerick, and Hartranft. In addition to this, papers were read by Mr. Edgerton on "The Wire Nail Trust," and by Mr. Hartranft, on "The State Regulation of Labor."

## SEMINAR IN ECONOMIC THEORY.

Professor Clark. 7 meetings. 10 members.

Papers have been read on "The Theory of Bimetalism," "The History of the Latin Union," "The History of the Wages-Fund Doctrine," "Thrift as a Remedy for Agricultural Depression," "The Concentration of Population"; also on "The Present Status of Capitalistic Combinations."

## STATISTICAL LABORATORY AND SEMINAR.

Professor Mayo-Smith. 11 members. Fortnightly.

The students were engaged during the first term in an analysis of the statistics of population contained in the Eleventh Census of the United States. The practical piece of work consisted in the analysis and tabulation of 500 family records from the Charity Organization Society, consisting of cases beginning in the year 1890. The object was to determine the causes of destitution, the method of treatment, the effect of the treatment, and whether the cases became chronic or not. The students performed the laborious work of reading the records with great faithfulness and intelligence. During the second term, seven essays, mainly of a statistical character, were read, as follows:

Mr. Hiester, "The Social Distribution of Wealth"; Mr. Coleman, "Money"; Mr. Hall, "Self-Help among the Laboring Classes"; Mr. Stevenson, "The Statistics of Occupations"; Mr. Hudson, "Financial Statistics"; Mr. Fowler, "Credit and an Elastic Currency"; Mr. Weber, "Statistics of Urban Growth."

## SEMINAR IN SOCIOLOGY.

Professor Giddings. 17 meetings. 17 members.

The work consisted of theoretical discussions, studies of the election returns of November, 1896, and investigations of social conditions in New York City. Individual members of the Seminar assisted Professor Mayo-Smith in the Statistical Laboratory in the tabulation of the statistics of the history of assisted families, for the Charity Organization Society. The following papers were read and discussed in the Seminar during the year:

Sectionalism and Representation in South Carolina.....	Mr. Schaper.
The Basis of Social Phenomena.....	Mr. Howard.
The third volume of Spencer's <i>Sociology</i> .....	Mr. Stevenson.
The Election Returns of Kansas.....	Mr. Merriam.
City Government in New York.....	Mr. Wilcox.
Political Conditions in the Western Reserve...	Mr. Dynes.
Hartley House.....	Dr. Stokes.
Criminal Anthropology.....	Mr. Tuttle.
The Socialist Labor Party.....	Mr. Holt.
Election Returns of Pennsylvania, and the Pennsylvania Germans.....	Mr. Hiester.

During the year the following gentlemen have held Fellowships in subjects falling under the jurisdiction of this Faculty :

1. Frank Green Bates . . . American History.  
B.L., Cornell University, 1891.  
Subject of investigation: Rhode Island and the Federal Union, 1765-90.  
Mr. Bates has also presented reports on a variety of subjects in American Colonial History. He has taken part in the work of the Seminar in Legal History.
2. Horace Mann Conaway . . . European History.  
A.B., Scio College, 1888.  
A.B., Ohio University, 1892.  
Subject of investigation: The Origin of the First French Republic.
3. Charles Franklin Emerick . . . Economics.  
A.B., Wittenberg College, 1889.  
A.M., " " 1892.  
M.S., Michigan Agricultural College, 1891.  
Ph.M., Michigan University, 1895.  
Subject of investigation: An Analysis of Agricultural Discontent in the United States.  
Mr. Emerick has also read a paper on "Thrift as a Remedy for Agricultural Depression." He has taken part in the work of the Seminar in Legal History, and in the Seminar in Political Economy.

4. Frederick Smith Hall . . . Finance.  
A.B., Wesleyan University, 1894.  
Subject of investigation: Sympathetic Strikes.  
Mr. Hall also read a paper on "The History of the Wages-Fund Doctrine," a paper on "The History of the Latin Union," a paper on "The Theory of Income," and a paper on "Self-Help among the Laboring Class."
5. Frederick Berg Hartranft . . . Public Law.  
A.B., Columbia University, 1894.  
Subject of investigation: Factory Laws and Inspection in the United States.  
Mr. Hartranft also read a paper on "Factory Legislation."
6. Anselm Vinet Hiester . . . Sociology.  
B.S., Lebanon Valley College, 1887.  
A.B., Franklin and Marshall College, 1889.  
Subject of investigation: The November Election Returns in Pennsylvania, and the Political History and Affiliations of the Pennsylvania Germans.  
Mr. Hiester has also worked in the Statistical Laboratory and presented a paper on "The Social Distribution of Wealth."
7. William Herbert King . . . Municipal Administration.  
B.S., Massachusetts Institute of Technology, 1894.  
A.B., Harvard University, 1896.  
Subject of investigation: Municipal Finance.  
Mr. King has been at work upon the subject of Municipal Finances, particularly with reference to the control exercised over them by the State Government.  
He also read a paper on "The History of the American Income Tax."

8. Francis Raymond Stark . . . International Law.  
A.B., St. Francis Xavier College, 1893.  
A.M., St. Francis Xavier College, 1894.  
LL.B., Columbia University, 1896.  
Subject of investigation: The Abolition of Privateering, and the Declaration of Paris.
  9. Adna Ferrin Weber . . . Economics and Social Science.  
Ph.B., Cornell University, 1894.  
Subject of investigation: The Growth of Cities in the Nineteenth Century.  
Mr. Weber has worked in the Statistical Laboratory and presented a paper on "Statistics of Urban Growth."  
He has also read papers on "The Practical Application of the Theory of Railway Rates," and "Concentration of Population."
  10. William Clarence Webster . . . Seligman Fellow.  
A.B., Albion College, 1887.  
Subject of investigation: Recent Centralizing Tendencies in State Educational Administration.  
This will appear in the "Studies."
- Milo R. Maltbie . . . (Late Fellow) in Administration.  
Continuing his studies here as a University Scholar.  
Ph.B., Upper Iowa University, 1892.  
Ph.M., Northwestern University, 1893.  
Subject of investigation: English Local Government of To-Day. He has completed this work, which is of considerable size, and presented it as his Doctor's dissertation. It will appear in the "Studies in History, Economics, and Public Law." He also read a paper on "The Theory of Bimetallism."

#### WORK IN AMERICAN HISTORY AT BARNARD COLLEGE.

Professor Osgood's advanced course in American Colonial History has been attended by eight students. Of these

three are candidates for the degree of Master of Arts, and the rest are special students.

Elizabeth B. Cutting is preparing a dissertation for the degree of Master of Arts on "Massachusetts Towns."

Alice M. Keys is also preparing a dissertation for the same degree on "The Administration of Governor George Clinton, of New York, 1743-53."

Mr. Cushing has given a course of three hours' work in American History. It has been attended by eleven students.

Professor Robinson gave one course at Barnard of two hours a week upon Europe during the Revolutionary and Napoleonic Period. Fifteen students attended.

#### WORK IN SOCIOLOGY AT BARNARD COLLEGE.

Professor Giddings gave a course of lectures, two hours a week, in the first half of the year, on Pauperism, Poor Laws, and Charities, and in the second half of the year on Crime and Penology. These courses were identical with Courses XXII and XXIII given at Columbia University, and were attended by fourteen students. In connection with these courses Professor Giddings conducted a seminar fortnightly through the year, in which fourteen students participated. The following papers were read and discussed:

A Study of the English Poor Law from 1649 to 1685, including the Period of Cromwell's Protectorate and the Reign of Charles II.....	Miss Putnam.
The Development and Results of the Settlement Law during the Reigns of James II and William III.....	Miss Hulbert.
The Poor Law in the Reign of Queen Anne...	Miss Sterne.
The Poor Law in the Reign of George II.....	Miss Colgate.
Evils of Out-Relief. A Study of the Poor Law from the Accession of George III. to the Reform of 1834.....	Miss Clews.
The Evolution of the English Workhouse....	Miss Kingsbury.
The Development of the English Poor Law from 1760 to 1800.....	Miss Hurd.
Pauperism in England from 1800 to 1820....	Miss Slade.

## COURSES IN ECONOMIC THEORY IN BARNARD COLLEGE.

Two courses of lectures on Economic Theory, each consisting of two lectures a week for one term, have been given by Professor Clark in Barnard College during the past year. In the first course, the Law of Wages and Interest was presented, and in the second the Sources of Business Profits and the Effects of Combinations of Laborers and Employers were discussed. There were sixteen students in the class.

COURSES IN POLITICAL ECONOMY AND FINANCE AT  
BARNARD COLLEGE.

Professor Mayo-Smith gave a course of lectures of two hours a week during the first half-year on the Problems of Distribution. There were six students in the class.

Professor Seligman gave a course of lectures, two hours a week during the second half-year, on Taxation and Finance. This course was attended by sixteen students. In connection with this course Professor Seligman conducted a seminar fortnightly during the second half-year, which was attended by eight students, and which discussed the subject of Foreign Exchange and the International Flow of the Precious Metals.

During the year 63 applications were received for University Fellowships in the subjects falling under the jurisdiction of the Faculty of Political Science. Twenty-six of the applicants gave evidence of such high merit as to warrant their recommendation by the Faculty to the University Council for Fellowships. Eight of the persons so recommended were appointed by the Council.

In addition to the applicants for Fellowships, who by the regulations of the Council are to be considered first in the award of the University Scholarships, 19 persons applied specifically for Scholarships. There were, therefore, 37 candidates for Scholarships in the subjects under the Faculty of Political Science. Eleven of these have been appointed by the Council to University Scholarships.

During the past year the Faculty of Political Science has recommended to the University Council the names of the following students, for the degree of Doctor of Philosophy:

Harry Alonzo Cushing,

Amherst College, A.B., 1891.

Columbia University, A.M., 1894.

Major subject: American History.

Minor subjects: European History.

Political Economy and Finance.

Dissertation: The History of the Transition from Provincial to Commonwealth Government in Massachusetts.

Henry Crosby Emery,

Bowdoin College, A.B., 1892.

Harvard University, A.M., 1893.

Major subject: Political Economy and Finance.

Minor subjects: Sociology and Statistics.

Roman Law and Comparative Jurisprudence.

Dissertation: Speculation in Stock and Produce Exchanges in the United States.

Charles Ernest Chadsey,

Leland Stanford University, A.B., 1892.

Columbia University, A.M., 1894.

Major subject: American History.

Minor subjects: European History.

Political Economy and Finance.

Dissertation: The Struggle between President Johnson and Congress over Reconstruction.

Ernst Freund,

Heidelberg, J.U.D., 1884.

Major subject: Roman Law and Comparative Jurisprudence.

Minor subjects: Administrative Law.

American History.

Dissertation: The Theory of Corporate Existence.

- Charles Franklin Emerick,  
Wittenberg College, A.B., 1889 ; A.M., 1892.  
Major subject : Economics.  
Minor subjects : American History.  
Sociology.  
Dissertation : An Analysis of Agricultural Discontent  
in the United States.
- William Clarence Webster,  
Albion College, A.B., 1887.  
Major subject : Administrative Law.  
Minor subjects : Constitutional Law.  
American History.  
Dissertation : Recent Centralizing Tendencies in State  
Educational Administration.
- Milo Roy Maltbie,  
Upper Iowa University, Ph.B., 1892.  
Northwestern University, Ph.M., 1893.  
Major subject : Administrative Law.  
Minor subjects : Constitutional Law.  
Economics and Finance.  
Dissertation : English Local Government of To-Day.
- Francis Raymond Stark,  
College of St. Francis Xavier, A.B., 1893 ; A.M., 1894.  
Columbia University, LL.B., 1896.  
Major subject : International Law.  
Minor subjects : Constitutional and Administrative  
Law.  
Constitutional History of England  
and the United States.  
Dissertation : The Abolition of Privateering, and the  
Declaration of Paris.
- Walter Shepard Ufford,  
Amherst College, A.B., 1882 ; A.M., 1885.  
Major subject : Sociology and Statistics.  
Minor subjects : Political Economy and Finance.  
Political Philosophy.  
Dissertation : Fresh-Air Charity in the United States.

Frank Henry Sparks Noble,

Drake University, A.B., 1892.

University of Iowa, A.M., 1894.

“ “ “ LL.B., 1894.

Major subject: Political Economy and Finance.

Minor subjects: Administrative Law.

Sociology and Statistics.

Dissertation: Taxation in Iowa.

Garry Nathan Calkins,

Massachusetts Institute of Technology, B.S., 1890.

Minor subject: Sociology and Statistics.

For the degree of Master of Arts the Faculty recommend

Bernard Alexander,

Columbia College, A.B., 1896.

Major subject: Political Science and Comparative Constitutional Law.

Minor subjects: Roman Law.

American History.

Essay: Critique of the Slaughter-House Cases.

Helen Culbertson Annan,

Bryn Mawr College, A.B., 1891.

Major subject: Sociology.

Minor subject: Economics.

Essay: The Todas of the Nilgeri Hills (a Sociological Study).

Edwin Atkinson Bayles,

Columbia University, A.B., 1896.

Major subject: The History of Political Theories.

Minor subjects: Constitutional History of England.  
Criminal Law.

Essay: The Political Philosophy of Edmund Burke.

Elsie Worthington Clews,

Columbia University, A.B., 1896.

Major subject: Sociology.

Minor subject: Economic Theory.

Essay: The Recipients of Public and Private Relief in  
New York City.

Thomas Coleman,

Marietta College, A.B., 1893.

Major subject : Political Economy.

Minor subjects : American History.

Statistics and Sociology.

Essay : An Inquiry into the Arguments for and against  
the Independent Free Coinage of Silver by the  
United States.

Elizabeth Brown Cutting,

Vassar College, A.B., 1893.

Major subject : American History.

Minor subject : European History.

Essay : The Massachusetts Towns.

David Cohn,

Columbia University, A.B., 1896.

Major subject : Constitutional Law.

Minor subjects : Administrative Law.

American History.

Essay : A Critique upon the Slaughter-House Cases.

Maurice Cohn,

Columbia University, A.B., 1896.

Major subject : Comparative Constitutional Law.

Minor subjects : History of the United States, 1849-  
1861.

Civil war and Reconstruction ; Admin-  
istrative Law.

Essay : A Critique of the Slaughter-House Cases.

John Howard Dynes,

Adelbert College, A.B., 1891.

Major subject : Sociology.

Minor subjects : Economics.

American History.

Essay : Political Conditions in the Western Reserve.

Oscar Weeks Ehrhorn,

College of the City of New York, A.B., 1895.

Major subject : American History.

Minor subjects : European History.

Political Economy and Finance.

Essay : Dutch on the Hudson and Delaware.

- Carl Hitchcock Fowler,  
 University of Minnesota, A.B., 1895.  
 " " " B.S., 1896.  
 Major subject: Political Economy and Finance.  
 Minor subjects: Sociology; Pauperism; Crime and Punishment.  
 Criminal Law.  
 Essay: Credit and an Elastic Currency.
- James Joseph Franc,  
 University of Michigan, Ph.B., 1896.  
 Major subject: History of Political Theories.  
 Minor subjects: Criminal Law.  
 Political Economy.  
 Essay: The Political Theories of Jeremy Bentham.
- Gardner Kirk Hudson,  
 Brown University, A.B., 1896.  
 Major subject: Statistics (and Sociology).  
 Minor subjects: Finance.  
 Political Philosophy.  
 Essay: Finance Statistics.
- Edith J. Hulbert,  
 Vassar College, A.B., 1894.  
 Major subject: Sociology.  
 Minor subject: Political Economy.  
 Essay: Certain Conceptions of Responsibility.
- Alice Mapelsden Keys,  
 Columbia University, A.B., 1893.  
 Major subject: American History.  
 Minor subjects: French History.  
 Finance.  
 Essay: The Administration of Governor George Clinton of New York, 1743-1753.
- William Herbert King,  
 Massachusetts Institute of Technology, B.S., 1894.  
 Major subject: Administrative Law.  
 Minor subjects: Constitutional Law.  
 Science of Finance.  
 Essay: State Control of Municipal Finance.

Herbert Allan Knox,

College of the City of New York, A.B., 1896.

Major subject: Constitutional History of the United States.

Minor subjects: Constitutional History of England.  
Criminal Law.

Essay: Early Settlements in New England.

James Thomas Aloysius Lee,

College of the City of New York, B.S., 1896.

Major subject: Constitutional History of the United States.

Minor subjects: Criminal Law.  
Constitutional History of England.

Essay: The Baltimore Family and the Settlement of Maryland.

Irving Lehman,

Columbia University, A.B., 1896.

Major subject: Constitutional Law.

Minor subjects: Administrative Law.  
Taxation and Finance.

Essay: The Fourteenth Amendment.

Frederick Montgomery Livingston,

Columbia University, A.B., 1896.

Major subject: Constitutional Law.

Minor subjects: Administrative Law.  
American History.

Essay: The Dred Scott Case.

Charles Edward Merriam, Jr.,

Lenox College, A.B., 1893.

State University of Iowa, A.B., 1895.

Major subject: Political Philosophy.

Minor subjects: American History.  
Comparative Constitutional Law.

Essay: Political Philosophy of Machiavelli.

Mary Dorsey McMurtrie,  
Bryn Mawr College, A.B., 1889.  
Major subject: Economics.  
Minor subject: Sociology.  
Essay: A Partial History of the Theory of Land Taxation.

James Mitchell,  
Alma College, Michigan, Ph.B., 1893.  
Major subject: United States History.  
Minor subjects: European History.  
Essay: Douglas's Attitude toward the South.

William Dunlap Moore,  
Yale University, A.B., 1895.  
Major subject: Economics.  
Minor subjects: International Law.  
Sociology.  
Essay: Development and Present Status of Capitalistic Combinations under the Influence of American Legislation.

Leonard Jerome Obermier,  
Columbia University, A.B., 1896.  
Major subject: Constitutional Law.  
Minor subjects: Administrative Law.  
Taxation and Finance.  
Essay: War Power of the Executive in the United States.

Mabel Parsons,  
Columbia University, A.B., 1895.  
Major subject: Economics.  
Minor subjects: Sociology.  
American History.  
Essay: The Single Tax.

George Cornell Tarler,

College of the City of New York, B.S., 1895.

Major subject: Political and Constitutional History of  
the United States.

Minor subjects: Political and Constitutional History of  
England.

Criminal Law.

Essay: The Settlement of the Carolinas.

William Ransom Tuttle,

Olivet College, A.B., 1894.

" " B.S., 1894.

Major subject: Sociology.

Minor subjects: Economics.

International Law.

Essay: Criminal Anthropology.

Oscar Wagner,

College of the City of New York, B.S., 1896.

Major subject: Constitutional History of the United  
States.

Minor subjects: Constitutional History of England.

Criminal Law.

Essay: New York under the English, 1664-1690.

Christian Charles Herman Zillman,

Missouri State University, B.S., 1895.

Major subject: Constitutional Law.

Minor subjects: Criminal Law.

Taxation.

Essay: The Case of *Munn vs. Lee*.

Chester James Wilcomb,

Minor subject: Church History.

J. W. Stephens,

Minor subject: Sociology.

James Anderson Laurie, Jr.,

Minor subject: Sociology.

Clara L. Ziegler,  
 Minor subjects : Sociology.  
 Church History.

Louis Halsey Holden,  
 Minor subject: Church History.

Charles Herbert Scholey,  
 Minor subject: Church History.

*The Political Science Quarterly* has passed through another season of successful existence, and the evidences of its increasing influence as an organ of sound conservative political thought multiply from year to year.

During the academic year, several additional numbers have appeared in the "Series of Studies in History, Economics and Public Law." Part of these appeared under the management of Professor Moore, and part under the management of Professor Seligman, to whose care the Series was again entrusted at the beginning of 1897.

- |   |                                   |
|---|-----------------------------------|
| 1. History of Proprietary Government in Pennsylvania.   | } William Robert Shepherd, Ph.D.  |
| 2. History of the Transition from Provincial to Commonwealth Government in Massachusetts.         | } Harry A. Cushing, Ph.D.         |
| 3. Speculation on the Stock and Produce Exchange in the United States.                            | } Henry Crosby Emery, Ph.D.       |
| 4. The Struggle between President Johnson and Congress for Reconstruction.                        | } Charles Ernest Chadsey, Ph.D.   |
| 5. Recent Centralizing Tendencies in State Educational Administration.                            | } William Clarence Webster, Ph.D. |
| 6. Abolition of Privateering, and the Declaration of Paris.                                       | } Francis R. Stark, LL.B., Ph.D.  |
| 7. English Local Government of To-Day : A Study of the Relations of Central and Local Government. | } Milo Roy Maltbie, Ph.D.         |

These numbers constitute Volumes 6, 7, and 8 of the Series, and make the beginning of Volume 9.

The Academy of Political Science has been reorganized upon broader lines, with the purpose of connecting the best political thought of the city with that of the University.

Some eighty gentlemen of high standing as jurists, publicants, and economists were invited to join with the Faculties of Law and Political Science of the University in forming a body of Academic Fellows, around which body, as a nucleus, it is designed to collect a large number of associates and student members. The work in this direction is progressing satisfactorily. Nearly all of the eminent gentlemen invited to become Fellows responded most cordially, and the project of extension is already inaugurated and in process of execution. Two scientific meetings of the Academy have been held, at the first of which a most instructive paper, written by Mr. E. L. Godkin, upon "History of the Nominating System in the United States," was read, and at the second of which Professor Goodnow presented a most exhaustive study of Trade Combinations at Common Law. It is expected that these scientific meetings will hereafter be held monthly throughout the academic season.

The Faculty of Political Science deeply regret the termination of Dr. Bancroft's connection with the University, and feel it to be a loss not easily made good. On the other hand, they feel greatly strengthened and encouraged by the accession of Professor Sloane, and also by the continuance of Mr. Beer as a permanent lecturer, after the expiration of his term as prize lecturer. The Faculty now feel that they are fully manned and equipped in the University Department of History, and are prepared to compete with the greatest universities of the world in historical study and research.

In conclusion allow me to say that it is the unanimous verdict of this Faculty that the year now closing has been the most successful year of their history in the development of high scholarship and sincere work among the large number of students under their instruction.

It has been an arduous work to introduce, even in a small degree, the methods, subjects, and purposes of the University into the American community, dominated so completely as it was twenty-five years ago by those of the college and professional school. This work seems, however, to have

been at last fairly accomplished at this institution, and the university students seem at last to have comprehended both the methods of research and the machinery of the University. It is to be hoped that the period of experiment with university organization, and the consequent confusion in the minds of the students in regard to it, is now fairly closed, and that both Faculties and students may henceforth be able to devote their entire energies to the advancement of sound and thorough scholarship.

Very respectfully submitted,

JOHN W. BURGESS,

*Dean.*

# SCHOOL OF PHILOSOPHY

## REPORT OF THE DEAN

FOR THE ACADEMIC YEAR ENDING JUNE 30, 1897.

*To the President of Columbia University  
in the City of New York :*

SIR:

I have the honor to submit herewith the seventh annual report on the work of the Faculty of Philosophy. This report covers the academic year ending June 30, 1897. The various courses of instruction and research offered by the Faculty, together with a statement of the attendance upon each, are summarized in the accompanying tabular view marked A. A list of the University Fellows appointed in the departments falling under the jurisdiction of this Faculty, together with an outline of the special work of each during the year, will be found in the accompanying statement marked B. A list of the recommendations for University degrees made by this Faculty during the year is given in the statement marked C.

During the year the number of students pursuing their studies either wholly or in part under the direction of this Faculty has been 263, an increase over the preceding year of 36, or 15.86 per cent. The composition of the list of students is as follows:

1. Candidates for the degree of Bachelor of Arts :		
Seniors in Columbia College.....	53	
Seniors in Barnard College.....	21	
Total.....		74
2. Students holding a bachelor's degree, or its equivalent from a foreign institution :		
Men.....	97	
Women—registered through Barnard College.....	34	
		131
3. Not included in the above classes.....		58
		263

Of the number of students enrolled under the Faculty, 47 were students in the Theological Seminaries of New York, admitted in accordance with the resolutions of the Trustees passed April 7, 1890. Of this number, 38 came from the Union Theological Seminary, 8 from the General Theological Seminary, and 1 from the Jewish Theological Seminary. This is a decrease, compared with last year, of 25 students from Union Seminary, and an increase of 4 from the General Seminary.

The number of auditors enrolled during the year was 25, an increase of 6 over 1895-96. Of this number, 6 attended courses in Philosophy; 6, courses in Education; 3, courses in Psychology; 2, courses in English; 2, courses in Literature; 2, courses in Music; 2, courses in Semitic Languages; 1, courses in Romance Languages; and 1, courses in Latin.

The degrees held by the 137 graduate students were as follows:

Degrees signifying a liberal or general education:

Bachelor of Arts.....	108
Bachelor of Philosophy.....	4
Bachelor of Science.....	16
Bachelor of Literature.....	3
	<hr/>
	131

Degrees signifying a technical or professional education:

Bachelor of Divinity.....	2
Bachelor of Laws.....	1
Bachelor of Pedagogy.....	1
Bachelor of Education.....	1
Civil Engineer.....	1
Electrical Engineer.....	1
Mechanical Engineer.....	1
Bachelor of Theology.....	1
	<hr/>
	9

Advanced degrees:

Master of Arts.....	28
Master of Science.....	3
Master of Pedagogy.....	1
Master of Pharmacy.....	2
Doctor of Philosophy.....	1
	<hr/>
	35

Total.....	175
Deduct for students holding more than one degree..	38
	<hr/>
	137

The 137 students holding degrees represented the following colleges and universities:

Adelbert College.....	3
Albion College.....	1
Alfred University.....	1
Alma College.....	1
Amherst College .....	1
Augustana College.....	1
Boston University.....	3
Brooklyn Polytechnic Institute.....	2
Brown University.....	2
Bryn Mawr College.....	3
Central College (Ky.).....	1
Cincinnati University.....	2
Colgate University.....	1
College of the City of New York.....	7
Columbia College.....	38
Columbian University.....	1
Cornell University.....	1
Cumberland University.....	2
Dartmouth College .....	1
Denison University.....	1
General Theological Seminary.....	1
Hamilton College.....	1
Harvard University .....	3
Hobart College.....	1
Indiana State University.....	1
Iowa Western University.....	1
Keystone Normal School.....	1
Lafayette College.....	2
Lake Forest University.....	1
Lincoln University .....	1
London University.....	1
Maryland Agricultural College.....	1
Michigan Agricultural College.....	1
Middlebury College.....	1
Missouri State University.....	1
Mt. Holyoke College.....	1
New York University.....	1

Niagara University.....	1
Oberlin College.....	3
Ohio State University.....	2
Oregon State University.....	1
Princeton College.....	2
Radcliffe College.....	1
Smith College.....	5
State Normal College, Albany, N. Y.....	1
Stevens Institute of Technology, N. J.....	1
Syracuse University.....	1
Toronto University, Canada.....	2
Trinity, N. C.....	1
Trinity University, Texas.....	2
Union College.....	1
University of Alabama.....	1
University of France.....	1
University of Kansas.....	1
University of Michigan.....	2
University of Minnesota.....	2
University of Vermont.....	2
Urmi College.....	1
Vassar College.....	6
Wabash College.....	2
Wellesley College.....	2
Wesleyan University, Conn.....	2
Western Reserve University.....	1
Whitworth College.....	2
Williams College.....	1
Wittenberg College.....	1
Wooster University.....	3
Yale University.....	7
<hr/>	
68 institutions	Total..... 154
Deduct for duplication.....	17
<hr/>	
Total.....	137

At the close of the year 49 candidates for the degree of Bachelor of Arts were certified to the Faculty of the College

as having satisfactorily completed such work as they had undertaken with the Faculty of Philosophy.

The number of courses given during 1896-97 by the several departments represented in this Faculty, as compared with those of the previous year, was as follows :

	Number of Courses	Increase	Decrease
Philosophy, Psychology, and Education.....	25	8	—
Greek.....	10	—	—
Latin.....	10	—	—
English.....	6	—	4
Literature.....	7	3	—
Rhetoric.....	4	2	—
Germanic Languages.....	8	2	—
Romance Languages.....	15	4	—
Oriental Languages.....	14	6	—
Indo-Iranian Languages.....	6	—	1
Linguistics.....	1	—	—
Music.....	1	1	—
	<hr/>	<hr/>	<hr/>
Totals.....	107	26	5
		5	
		<hr/>	
Net increase.....		21	

In the following table is given a comparative statement of the enrollment under this Faculty since its foundation :

	1890-1	1891-2	1892-3	1893-4	1894-5	1895-6	1896-7
Total enrollment..	92	130	130	165	190	227	263
Number holding degrees.....	52	56	62	92	120	147	131
Per cent.....	56.5	43.0	47.7	55.7	63.1	65.2	49.9
Seniors in Co- lumbia College and students of equivalent standing.....	32	41	58	55	51	62	74
Per cent.....	34.8	31.5	46.6	33.3	26.9	27.3	28.1
Not included in either of the above.....	8	33	10	18	19	17	58
Per cent.....	8.7	25.5	5.7	11.0	10.0	7.5	22.0

The number of Seniors in the College electing courses in Philosophy, Philology, and Letters each year has been as follows:

	1890-1	1891-2	1892-3	1893-4	1894-5	1895-6	1896-7
Number in Senior class.....	49	50	71	70	49	56	59
Number electing studies in Philosophy, Philology, and Letters.....	32	38	57	55	41	44	53
Per cent.....	65.3	76.0	80.3	78.6	83.7	76.6	90.0

The total number of Seniors in Barnard College electing courses in the Faculty of Philosophy was 21. These were distributed among the several departments as follows:

Philosophy and Education.....	18
Psychology.....	6
Greek.....	7
Latin.....	10
Romance Languages.....	7
Germanic Languages.....	2
English.....	11
Rhetoric.....	9

The following extracts from the Minutes of the Faculty record the most important legislation of the year:

(Nov. 13, 1896)—*Resolved*, That Literature be made the equivalent of a major and one minor subject; that Turkish and Armenian be made each a minor subject; that Anglo-Saxon and Gothic be made each a minor subject; that Anthropology be made a major subject; that Spanish and Italian be made each a minor subject for the degree of Master of Arts.

(Nov. 13, 1896)—*Resolved*, That the following regulations be adopted and inserted in the list of regulations concerning candidates for the higher degrees in the circular of the School of Philosophy:

Students that are not candidates for a degree may be admitted to pursue such courses, from among those which are offered by this Faculty, as they may show themselves competent to undertake. Of this competency, the head of the department in which the special student proposes to study shall be in each case the judge. If, at the close of his period of study in any department, the special student shall prepare such an essay and stand such examination as would be required of a candidate for the degree of Master of Arts offering that study as his major subject, he may be recommended by the head of that department and by the Dean of Faculty to the University Council for a special certificate of proficiency in the department that he has chosen.

(Jan. 8, 1897)—*Resolved*, That the subject of Music be added to the list of both major and minor subjects offered by this Faculty to candidates for the degrees of Master of Arts and Doctor of Philosophy; the several courses offered each year by the department to be given such weight as may be attached to them by the Professor of Music, in accordance with the general regulations of this Faculty and the University Council.

(Jan. 8, 1897)—*Resolved*, That the following conditions for the award of the H. C. Bunner Medal be approved:

1st.—That the competition be open to all candidates for any Columbia degree, thus including the students of both the College and the University and also of the Teachers College and Barnard, and excluding special students and the students of the seminaries.

2d.—That the essays be sent to the President on or before May 1st, typewritten and without the real name of the writer, which shall be in a sealed envelope accompanying each essay.

3d.—That the President appoint every year a committee of three to select the annual subjects and also to decide upon the essay most worthy of the medal.

4th.—That the subjects be announced three years in advance.

The committee has announced as the subject for 1897, "American Satiric Poetry." It suggests subsequent subjects, as follows: For 1898, "The Influences which Affected both Hawthorne and Poe"; for 1899, "The Oratory of Daniel Webster"; and for 1900, "The American Indian in American Poetry."

By an oversight, Statement C, accompanying my report for 1895-96, named Mr. James Perry Worden among those students who had been recommended to the University Council for the degree of Master of Arts. Mr. Worden's name should be omitted from the list of those recommended for that degree, inasmuch as his examinations are not yet satisfactorily completed.

On two important points of academic policy and administration, the experience of this Faculty continues, from year to year, to throw very interesting and instructive light. One of these points relates to the presence of women in the University on equal terms with men. This policy has now been tested, under the conditions that prevail here, for a number of years, and the results have been in every respect satisfactory. The presence of women in the lecture rooms has in no instance given rise to any of the embarrassments that are sometimes predicted, and their scholarship has been in all respects commendable. Indeed, the average scholarship of the women students has been somewhat superior to that of the men with whom they have been in the closest competition. It is possible to account for this, in part at least, by remembering that as yet only the most ambitious and best-prepared women go forward to a university course. But after all allowance has been made for this fact, it remains to be said that the record made by women in the University is quite beyond criticism.

The second point relates to the admission of students to the University. Columbia has pursued the policy of throwing open its doors to all college graduates, welcoming them to the advanced work for which they are found to be competent, but reserving to itself the right to pass upon their qualifications for a higher degree. This policy rests upon

the conviction that the testimony of a body of teachers who have been in personal contact with a student for several years, is a better criterion of the ability of that student to undertake university work, than the result of any technical examination by officers of the University to whom the applicant is a total stranger, could possibly be. In this way the difficult problem of admission examinations, or entrance conditions, has been satisfactorily solved. I am of opinion that this experience is useful in indicating how the College may, in a similar fashion, adjust its relations to the secondary schools. As the University accepts the judgment of the colleges of the country, in determining what students shall be admitted to candidacy for higher degrees, so I believe the College may justly accept the judgment of the secondary schools in determining what students shall be admitted to the Freshman class. It would then be open to the College, as it is now to the University, to adhere rigidly to its own tests and conditions for graduation ; but the artificial and unsatisfactory relation that exists between the secondary schools and the College, because of the existence and character of formal entrance examinations, would be done away with.

Inasmuch as a majority of those students under the Faculty of Philosophy who proceed to the higher degrees look forward to a teaching career, it is interesting to know how far such students have been successful in finding fitting opportunities for the exercise of their powers. Not all of the departments have kept a record of the careers of their graduate students, and, therefore, it is impossible to report a complete list of those students under this Faculty who have already obtained teaching positions. The following very incomplete list will, however, show how numerous and how widely separated have been the appointments to teach that have been tendered to students of this University.

William Rosenzweig Arnold, Ph.D., 1896.

Curator Metropolitan Museum of Art, New York City.

- Eiji Asada,  
Professor in University of Tokio, Japan.
- Charles Sears Baldwin, Ph.D., 1894.  
Instructor in Rhetoric, Yale University.
- Arthur Beatty, Ph.D., 1891.  
Instructor in English, University of Wisconsin.
- Ludwig Bernstein, Ph.D., 1897.  
Instructor in German, New York Public Schools.
- Francis Burke Brandt, Ph.D., 1895.  
Professor of Pedagogy, Central High School, Philadelphia, Pa.
- Henry Jagoe Burchell, Jr., A.M., 1893.  
Assistant in Latin, Columbia University.
- Frederick Taber Cooper, Ph.D., 1895.  
Professor of Latin, New York University.
- William Julius Eckoff, Ph.D., 1894.  
Sometime Professor of Pedagogy in Illinois State University.
- Frank Pierrepont Graves, A.M., 1891.  
President of the University of Wyoming, Laramie, Wyoming.
- Harold Griffing, Ph.D., 1895.  
Teacher in private schools, New York City.
- Joseph Herman Hertz, Ph.D., 1894.  
Lecturer on Rabbinical Philosophy, Syracuse University.
- William Addison Hervey, A.M., 1894.  
Tutor in German, Columbia University.
- Alfred Louis Kroeber, A.M., 1897.  
Assistant in Rhetoric, Columbia University.
- Caspar Levias, A.M., 1895.  
Assistant Professor of Semitic Languages, Hebrew Union College, Cincinnati, Ohio.
- Frederick Ludlow Luqueer, Ph.D., 1896.  
Principal of Public School No. 22, Brooklyn, N. Y.

Max Margolis, Ph.D., 1891.

Assistant Professor of Semitic Languages, Hebrew Union College, Cincinnati, Ohio.

Lewis Freeman Mott, Ph.D., 1896.

Assistant Professor of the English Language and Literature, City College, New York.

Edward Arthur Northall, A.M., 1891.

Teacher in private school, New York City.

George Clinton Densmore Odell, Ph.D., 1893.

Tutor in Rhetoric, Columbia University.

John Lovett Rile, A.M., 18 .

Teacher in private school, Brooklyn, N. Y.

James Dennison Rogers, Ph.D., 1894.

Assistant in Greek, Columbia University.

Stuart Henry Rowe, A.M., 1894.

Instructor in Education and Director of the Practice School, State Normal School, Mankato, Minn.

Frederic William Sanders,

Professor of Pedagogy, University of West Virginia.

Emma Goodeve Sebring, A.M., 1894.

Assistant Professor of the History of Education, Teachers College, New York.

Clarence Walton Vail, A.M., 1893.

Teacher in private school, Brooklyn, N. Y.

Seldon Lincoln Whitcomb, A.M., 1893.

Professor of English Literature in Iowa College, Grinnell, Iowa.

Norman Wilde, Ph.D., 1894.

Assistant in Philosophy, Columbia University.

Benjamin Duryea Woodward, Ph.D., 1891.

Instructor in Romance Languages, Columbia University.

Abraham Yohannan, A.M., 1895.

Lecturer in Oriental Languages, Columbia University.

Clarence Hoffman Young, Ph.D., 1891.

Instructor in Greek, Columbia University.

Mr. Robert Ellis Jones, who has for a portion of the year pursued courses in Philosophy under the direction of this Faculty, has recently been honored by a unanimous election to the presidency of Hobart College.

Respectfully submitted,

NICHOLAS MURRAY BUTLER,

*Dean.*

June 30, 1897.

# STATEMENT A

*Courses of Instruction, 1896-97*

160

## SCHOOL OF PHILOSOPHY

Instructor	Courses	Hours per Week	Students	Auditors	Total Number Attending
<b>PHILOSOPHY, PSYCHOLOGY, AND EDUCATION</b>					
<i>I.—Philosophy</i>					
Prof. Butler and Dr. Wilde Prof. Hyslop Prof. Butler and Mr. Mac- Vannel Dr. Wilde Prof. Hyslop Prof. Butler	I. Historical Introduction to Philosophy	{ 2 3 }	{ 50 16 }	{ 5 2 }	{ 55 18 }
	II. Ethics, introductory course	2	18		18
	IV. Modern British Philosophy	2	41	1	42
	V. Philosophy—History of English Ethics	1	6		6
	VI. Advanced Ethics	2	13		13
	Philosophical Seminar	2	16		16
<i>II.—Psychology</i>					
Instructors of the Division Prof. Cattell Prof. Cattell Prof. Cattell Prof. Cattell Mr. Strong Prof. Cattell Dr. Farrand Dr. Farrand	I. Introduction to Psychology	2	18	1	19
	II. Experimental Psychology, introductory course	2	8	2	10
	III. Experimental Psychology, laboratory work	2 (4)	5	1	6
	IV. Mental Measurement	2	7		7
	V. Research and Individual Instruction in Psychology	2	5		5
	VI. General Psychology	2	13		13
	VIII. Physiological Psychology	3	2		2
	X. Anthropology, introductory course	2	15		15
	XI. Anthropology, Primitive Culture	2	4		4
	<i>III.—Education</i>				
	I. History of Education	1	22	1	23
Prof. Butler Prof. Butler Prof. Butler  Prof. Hervey Prof. Reigart Prof. Baker Prof. Hervey Prof. Hervey	II. Principles of Education	2	28	5	33
	Educational Seminar		7		7
	and at Teachers College :				
	III. Methods of Teaching Mathematics in Elementary and Secondary Schools	1	1		1
	IV. Seminar	2	2		2
	VI. Psychology and General Method	1½	2		2
	VIII. Methods of Teaching English in Secondary Schools	1	3		3
	VIII A. Sunday-School Problems	1	1		1
	X. Methods of Teaching Latin and Greek in Secondary Schools	1	1		1

LINGUISTICS					
Prof. W. H. Carpenter and Gothheil	I. Introduction to the Science of Language	2	3	2	3
	LITERATURE				
Prof. Brander Matthews	I. Modern Fiction	2	26		26
Prof. Woodberry	II. Theory of Criticism	3	19		19
Prof. Brander Matthews	III. Dramatists of the Nineteenth Century	2	6		6
Prof. Brander Matthews	VI. Essayists	1	5		5
Prof. Woodberry	VII. Critical Studies in Literature	3	14	1	15
Prof. Woodberry	VIII. Historical Studies in Literature	3	11	2	13
Prof. G. R. Carpenter	IX. Lyric Poetry of the Middle Ages	3	13	2	15
	RHETORIC				
Prof. G. R. Carpenter	I. English Composition	2	1		1
Prof. G. R. Carpenter	II. English Composition, advanced course	2	1		1
Prof. G. R. Carpenter	III. English Composition, advanced course	2	9		9
Prof. Brander Matthews	V. English Versification	1	8		8
	ENGLISH				
Prof. Jackson	II. Anglo-Saxon Literature and Historical English Grammar	2	5		5
Prof. Price	III. Anglo-Saxon Literature	2	4		4
Prof. Price	V. Language and Literature of the 11th, 12th, and 13th Centu- ries	2	3		3
Prof. Price	VIII. Anglo-Saxon Prose and Historical English Syntax	2	2		2
Profs. Woodberry and Jackson	XIII. Elizabethan Literature, 1560-1660	3	21		21
Prof. Price	XIV. Pope : Language, Versification, and Poetical Method	2	18	2	20
	ORIENTAL LANGUAGES				
	I.—Semitic				
Prof. Gottheil	I. Biblical Hebrew, elementary course	2	3		3
Prof. Gottheil	II. Biblical Hebrew, second course	2	5		5
Prof. Gottheil	III. Biblical Hebrew, third course	2	4	1	5
Prof. Gottheil	IV. Rabbinical Hebrew	2	4		4
Prof. Gottheil	VI. Lectures on Post-Talmud Hebrew Literature	2	4		4
Prof. Gottheil	VII. Semitic Epigraphy	1	4		4
Prof. Gottheil	XI. Assyrian, advanced course	2	2		2
Prof. Gottheil	XII. Arabic, elementary course	2	7		7
Prof. Gottheil	XIII. Arabic, second course	2	7		7
Prof. Gottheil	XIV. Arabic, advanced course	2	7		7
Prof. Gottheil	XV. Syriac, elementary course	2	2		2
Mr. Yohannan	XVI. Syriac, advanced course	2	8		8
Prof. Gottheil	XVIII. Semitic Seminar	2	3		3
		2	9		9

Instructor	Courses	Hours per Week	Students	Auditors	Total Num- ber Attend- ing
Prof. Jackson Prof. Jackson	<i>II.—Sanskrit</i>				
	I. Sanskrit, elementary course	3	6		6
Prof. Jackson Prof. Jackson Mr. Yohannan	<i>III.—Iranian</i>				
	I. Avestan, elementary course	2	2		2
Prof. Jackson Prof. Jackson Mr. Yohannan	<i>IV.—Armenian</i>				
	IV. Avestan, advanced course	1	1		1
	X. Zoroaster, Buddha, and their Teaching	1	1		1
	XI. Modern Persian, introductory course	2	4		4
Mr. Yohannan	I. Principles of Armenian Grammar, with selected readings	1	1		1
Mr. Yohannan	<i>V.—Turkish</i>				
	Introductory course	2	4	1	5
Prof. Perry Prof. Wheeler Dr. Young Prof. Perry Prof. Wheeler and Dr. Young Dr. Young Prof. Wheeler Prof. Perry	GREEK				
	II. Rapid Reading of Homer, Hesiod, and Theocritus	2	5		5
	III. Lectures on Greek Literature, Part II.	3	6	1	7
	IV. & V. New Testament Greek: Gospels, the Acts, and the Epistles	2	10		10
	VI. Pindar, with Lectures on Lyric Poetry	3	7		7
	VII. Readings from Pausanias	2	6		6
	VIII. Lectures on the Manners and Customs of the Ancient Greeks	2	6		6
	IX. Introduction to Greek Archaeology, 1st half-year	1	2		2
	X. Greek Dialects, 1st half-year	1	3		3
	Greek Seminar	2	5		5
Dr. McCre Dr. McCre Dr. McCre Prof. Peck Prof. Peck Prof. Peck Prof. Egbert Prof. Egbert	LATIN				
	III. Cicero, <i>De Finibus</i>	2	5		5
	IV. The Roman Drama: Plautus and Terence	2	8		8
	V. Cicero and his Letters	2	4		4
	VI. History of the Latin Language	2	24		24
	VII. Persius	2	2		2
	VIII. Ennius	2	6		6
	IX. Latin Bibliography	1	2	1	3
	X. Latin Paleography and Diplomatics	1	1		1
	XI. Introduction to the Study of Latin Inscriptions	2	5		5
	VII. I. <i>Lectures on the Sources of Roman History</i>	2	9		9

GERMANIC LANGUAGES							
Prof. Thomas	I. Goethe's <i>Faust</i>	2	2	2	2	2	2
Prof. Thomas	II. History of German Literature	2	7	7	7	7	7
Dr. Babbitt	III. Historical Prose	2	2	4	4	4	4
Prof. W. H. Carpenter	IV. History of the new High German Language	2	2	4	4	4	4
Prof. W. H. Carpenter	VI. Gothic	2	2	2	2	2	2
Prof. W. H. Carpenter	VII. Icelandic	2	2	2	2	1	3
Profs. W. H. Carpenter and Thomas	VIII. History of Scandinavian Literature	2	2	3	3	3	3
Mr. Hervey	Scientific German	2	2	2	2	2	2
ROMANCE LANGUAGES							
<i>I.—Romance Philology</i>							
Prof. Todd	I. Introduction to Romance Philology	2	3	3	3	3	3
Prof. Todd	Seminar in Romance Philology	2	1	1	1	1	1
<i>II.—Provençal</i>							
Prof. Todd	I. Provençal	1	2	2	2	2	2
<i>III.—French</i>							
Dr. Page	II. History of French Literature in the 17th Century	3	1	1	1	1	1
Dr. Woodward	IV. 18th-Century Literature	3	2	2	2	2	2
Dr. Page	V. History of French Literature in the first half of the 19th Century	1	9	9	9	9	9
Mr. Loiseaux	VI. History of Literary Criticism in France, especially Sainte-Beuve and Brunetiere	1	5	5	5	5	5
Mr. Loiseaux	IX. Writers of the 16th Century, especially Montaigne	1	3	3	3	3	3
Dr. Woodward	XI. Old French	2	3	3	3	3	3
Dr. Woodward	XII. The French Chroniclers	2	3	3	3	1	4
Prof. Speranza, Dr. Woodward, Dr. Page, and Mr. Loiseaux	Seminar in Romance Literature	2	4	4	4	4	4
<i>IV.—Italian</i>							
Prof. Speranza	II. Italian Literature in the 15th and 16th Centuries	2	6	6	6	2	8
Prof. Speranza	IV. Critical Study of Dante's <i>Divina Commedia</i>	2	2	2	2	3	5
Prof. Speranza	V. History of Italian Literature	1	2	2	2	3	5
<i>V.—Spanish</i>							
Prof. Speranza	II. Don Quixote and the Time of Cervantes	3	2	2	2	2	2
MUSIC							
Prof. MacDowell	IV. Counterpoint, Canon, and Fugue : Form	2	1	1	1	6	7

*Statement B*

UNIVERSITY FELLOWS, 1896-97

1. Abraham Howry Espenshade . . . English.  
 Wesleyan University, A.B., 1894.  
 Subjects of investigation: Anglo-Saxon and Middle English Syntax; The Syntax of "William of Palerne."  
 Topics for papers or lectures: The Conjunctions in "William of Palerne," with Especial Reference to the Use of the Subjunctive Mood in Dependent Clauses; The Third Centenary of Tasso; A Metrical Translation of the *Hildebrandslied*.
2. Shepherd Ivory Franz . . . Psychology.  
 Columbia College, A.B., 1894.  
 Subjects of investigation: The Threshold, the Latent Period, and the Duration of After-Images, with Special Reference to the Time, Area, and Intensity of Stimulation; The Time of Adaptation of the Eye; The Study of Psychology and Education in Normal Schools.  
 Topics for papers or lectures: The Psychological Congress at Munich; The Duration of After-Images; Individual Psychology; Fatigue; Conditions of Fatigue in Reading; Visual After-Images.  
 Papers published: On the Conditions of Fatigue in Reading (with Dr. Harold Griffing), *Psychological Review*, iii, 513-530, also *Sitzungsberichte III Int. Cong. f. Psychologie*, p. 454; The Accuracy of Observation and of Recollection in School Children (with H. E. Houston), *Psychological Review*, iii, 531-535; Education at the Psychological Congress, *Educational Review*, xii, 280-283; The International Psychological Congress Science N. S., iv, 640-647.
3. Walter Taylor Marvin . . . Philosophy.  
 Columbia College, A.B., 1894.

Subjects of investigation: The Doctrines of Perception, Conception, and Judgment; The Philosophical System of Descartes.

Topics for papers or lectures: Locke on Innate Ideas; Locke's Theory of Relation; Berkeley's Applications of his Theory of Matter; The Results and Influence of Berkeley's Philosophy; Hume's Doctrine of Causation; Hume's Treatment of Personal Identity and Immortality; John Stuart Mill's Psychological Theory; Mr. Hobhouse on Simple Apprehension; Kant's Doctrine of Judgment; Kant's Doctrine of Reality; Wundt's Doctrine of Reality; Mr. Sidgwick on Ethical Judgment; Mr. Sidgwick on the Intuitional Doctrine of Justice.

4. Leonard Beecher McWhood . . . Psychology.

Columbia College, A.B., 1893.

Subjects of investigation: An Experimental Study of the Pleasure of Music and of its Dynamogenic Effects on Voluntary Movement.

Topics for papers or lectures: Two papers on the subject of Research; one paper on Professor Jastrow's Tests and Apparatus at the World's Fair; one paper at the Boston meeting of the American Psychological Association.

5. George N. Olcott . . . Classical Philology.

(Henry Drisler Fellow.)

Columbia College, A.B., 1893.

Subjects of investigation: Etruscan Archæology and Art; Roman Archæology; Greek Sculpture in Italy; Roman Numismatics; The Topography of Rome; Latin Palæography; Pompeii and Herculaneum.

Topics for papers or lectures: A Study of the Colubaria in Rome and in Etruria.

6. William Thomas Ferguson Tamblyn . . . Latin.

Toronto University, A.B., 1895.

Subjects of investigation: The Comitia and Tribune of the Early Roman Republic; Text-Criticism of Euripides' *Ion*, lines 1-237; Differences in Meaning of Latin Words as Corresponding to Differences of Quantity; The Roman Occupation of Britain.

Topic for paper or lecture: Latin Disquisition on the Text of Persius' *Sat.*, i, 90-106.

7. Joseph Russell Taylor . . . Literature.

Ohio State University, A.B., 1887.

Subjects of investigation: The Permanence of Imagery.

Topics for papers or lectures: A Literary Comparison of the Anglo-Saxon Fragment of *Judith* with Mr. Aldrich's Recent (1896) Poem of *Judith* and *Holo-Fernes*; A Review of Mr. Moore's Thesis on *Servius* on the Figures of *Virgil*; The Character of *Camilla* in the *Æneid*; *Virgil*, *Horace*, and *Tasso* Compared and Contrasted.

8. Newton Foster Vail . . . Latin.

Hobart College, A.B., 1890; Yale University, A.B., 1892.

Subjects of investigation: Early Christian Inscriptions to the Sixth Century; The Tragic Fragments of *Ennius*.

*Statement C*

RECOMMENDATIONS FOR DEGREES, 1896-97

I.—Doctor of Philosophy:

1. Arthur Beatty,

University of Toronto, A.B, 1893.

Major subject: English.

Minor subjects: Literature; Scandinavian.

Dissertation: Browning's Verse-Form; Its Organic Character.

2. Ludwig Bernstein,  
Classical Gymnasium in Mitau, Testimonium Maturitatis, 1890; Columbia University, A.M., 1894.  
Major subject: Germanic Languages and Literatures.  
Minor subjects: Gothic; Anglo-Saxon.  
Dissertation: The Order of Words in Old Norse Prose, with Occasional References to the Other Germanic Languages.
3. Albert Schneider,  
College of Physicians and Surgeons, Chicago, M.D., 1887; State University of Minnesota, B.S., 1894, State University of Illinois, M.S., 1894.  
Major subject: Botany (under the Faculty of Pure Science).  
Minor subjects: Botany (under the Faculty of Pure Science); Psychology.  
Dissertation: The Lichen-Flora of the Northeastern United States.

## II.—Master of Arts:

1. Helen Culbertson Annan,  
Bryn Mawr College, A.B., 1891.  
Major subject: Sociology (under the Faculty of Political Science).  
Minor subjects: Economics (under the Faculty of Political Science); French Literature.  
Essay: The Todas of the Nilgiri Hills.
2. Ralph Lionel Brydges,  
Graduate of Wycliffe College, Toronto, 1878–1881.  
Major subject: Philosophy.  
Minor subjects: German; Linguistics.  
Essay: Berkeley's Theory of Vision: How Far its Conclusions have Influenced, and been Adopted by, Modern Psychology.
3. Elsie Worthington Clews,  
Columbia University, A.B., 1896.

Major subject: Sociology (under the Faculty of Political Science).

Minor subjects: Education; Economics (under the Faculty of Political Science).

Essay: The Recipients of Public and Private Relief in New York City.

4. Abraham Howry Espenshade,  
Wesleyan University, A.B., 1894.  
Major subject: English Language and Literature.  
Minor subjects: Literature; German.  
Essay: A Study of the Conjunctions in "William of Palerne," with Especial Reference to the Use of the Subjunctive in Dependent Clauses.
5. Carrie Hammerslough,  
Columbia University, A.B., 1896.  
Major subject: Mathematics (under the Faculty of Pure Science).  
Minor subjects: Physics (under the Faculty of Pure Science); Italian.  
Essay: Continuity.
6. Louis Halsey Holden,  
Yale University, A.B., 1895.  
Major subject: Semitic Languages.  
Minor subjects: Semitic Languages; Church History (under the Faculty of Political Science).  
Essay: Translation from Syriac of "History of Jab-Alaha, Patriarch, and of Rabau Sauma."
7. Henry Budd Howell,  
Lafayette College, A.B., 1886.  
Major subject: Psychology.  
Minor subjects: Anthropology; Education.  
Essay: Time of Mental Processes.
8. Edith Josephine Hulbert,  
Vassar College, A.B., 1894.  
Major subject: Sociology (under the Faculty of Political Science).

- Minor subjects: Political Economy (under the Faculty of Political Science); Philosophy.  
Essay: Certain Conceptions of Responsibility.
9. Emil Alexander Charles Keppler,  
Columbia College, Ph.B., 1895.  
Major subject: Literature.  
Minor subjects: English; Philosophy.  
Essay: The North American Indian in the Poetry of the United States.
10. Horatio Sheafe Krans,  
Columbia College, A.B., 1894.  
Major subject: Literature.  
Minor subjects: Literature; French.  
Essay: The Character of Roland in the Chanson de Roland, and in the Epics of Palci, Boiarde, and Ariosto.
11. Alfred Louis Kroeber,  
Columbia College, A.B., 1896.  
Major subject: Literature.  
Minor subjects: Literature; Greek.  
Essay: The Elizabethan Conception of the Tragic.
12. James Anderson Laurie, Jr.,  
Oregon State University, A.B., 1894.  
Major subject: Philosophy.  
Minor subjects: Sociology (under the Faculty of Political Science); Church History (under the Faculty of Political Science).  
Essay: The Relation of Religion to Ethics.
13. Mary Dorsey McMurtrie,  
Bryn Mawr College, A.B., 1889.  
Major subject: Economics (under the Faculty of Political Science).  
Minor subjects: Sociology (under the Faculty of Political Science); Psychology.  
Essay: A Partial Theory of Land Taxation.
14. William Popper,  
Columbia College, A.B., 1896.

Major subject : Semitic Language.

Minor subjects: Semitic Language ; Anthropology.

Essay : Azharoth : Translation of a Hebrew MS. in  
Columbia University Library.

15. Hugo Radau,

Friedland, Prussia, Testimonium Maturitatis, 1890 ;  
General Theological Seminary, New York, S.T.B.,  
1896.

Major subject : Assyrian.

Minor subjects: Arabic ; Persian.

Essay : Cuneiform Tests in General Theological  
Seminary Library, Edited, Transcribed, and  
Translated.

16. Frederic Newton Raymond,

University of Kansas, A.B., 1896.

Major subject : Literature.

Minor subjects: Literature ; French.

Essay : Lowell's Critical Method.

17. Arthur Frank Joseph Remy,

College of the City of New York, A.B., 1890.

Major subject : Germanic Languages and Litera-  
tures.

Minor subjects: Germanic Languages and Litera-  
tures ; Sanskrit.

Essay : Klopstock.

18. Charles Herbert Scholey,

Western Reserve University, A.B., 1895.

Major subject : Philosophy.

Minor subjects: Sociology (under the Faculty of  
Political Science) ; Church History (under the  
Faculty of Political Science).

Essay : Hume and Mill on External Reality.

19. Samuel Swayze Seward, Jr.,

Columbia College, A.B., 1896.

Major subject : Literature.

Minor subjects: Literature ; Italian.

Essay : Unity in the *Orlando Furioso*.

20. Jessie Frances Smith,  
Vassar College, A.B., 1880.  
Major subject : Literature.  
Minor subjects : Literature ; Education.  
Essay : Literary Theories of the Lake School.
21. Joseph Russell Taylor,  
Ohio State University, A.B., 1887.  
Major subject : Literature.  
Minor subjects : Literature ; English.  
Essay : The Permanence of Imagery.
22. Helen Isabel Whiton,  
Smith College, A.B., 1894.  
Major subject : English Language and Literature.  
Minor subjects : French Language and Literature ;  
German Language and Literature.  
Essay : The Rime Royale in Chaucer.
23. Chester James Wilcomb,  
Harvard University, A.B., 1895.  
Major subject : Philosophy.  
Minor subjects : European History (under the  
Faculty of Political Science) ; Hebrew.  
Essay : Lessing and the Philosophy of Religion.
24. Clara Louise Ziegler,  
Oberlin College, A.B., 1890.  
Major subject : Education.  
Minor subjects : Rhetoric ; Sociology (under the  
Faculty of Political Science).  
Essay : The Rural Community and Educational  
Reform.

# SCHOOL OF PURE SCIENCE

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## REPORT OF THE DEAN

FOR THE ACADEMIC YEAR ENDING JUNE 30, 1897

*To the President of Columbia University  
in the City of New York :*

SIR :

I have the honor to submit the fifth annual report on the work of the Faculty of Pure Science. This report refers to the academic year ending June 30, 1897, and consists, first, of the report of the Dean, and, secondly, of the reports of the heads of departments represented in the Faculty.

The statistics of attendance in the School of Pure Science for the past year are embodied in the following detailed statement. Appended to this statement is a table giving a summary of the statistics of the School since its organization. The total number of students pursuing work either wholly or in part under the direction of this Faculty during the year was 149, an increase of 64, or 75 per cent., over the corresponding number of the preceding year.

Number of students registered primarily under the Faculty of Pure Science :

Candidates for the higher degrees.....	36
Special students (not candidates for degrees).....	19

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55

Number of students registered primarily under other Faculties of the University :

## Candidates for the higher degrees :

From Schools of Applied Science .....	4
“ School of Philosophy .....	1
“ School of Political Science.....	1
“ School of Medicine .....	7
“ Barnard College .....	5
	<hr/>
	18

## Number of students registered primarily under other Faculties of the University :

## Special students (not candidates for the higher degrees but pursuing graduate work) :

From Schools of Applied Science.....	9
“ School of Medicine.....	22
“ Columbia College.....	8
“ Barnard College.....	4
	<hr/>
	43

## Number of Seniors pursuing elective subjects under the Faculty of Pure Science :

From Columbia College.....	24
“ Barnard College.....	9
	<hr/>
	33

## Total number of students under instruction in the

School of Pure Science..... 149

Table showing statistics of attendance in School of Pure Science since its organization<sup>1</sup> :

<sup>1</sup> It should be observed that the numbers for 1893-4, 1894-5, and 1895-6, in the first two lines of this table, differ from those published hitherto. The numbers as given in previous reports have been changed in order to make them conform to the system of registration which went into effect at the beginning of the present academic year. The change simply transfers the numbers of graduate students from Barnard College whose major subjects fell under Pure Science from the first to the second line of the table.

	1892-3	1893-4	1894-5	1895-6	1896-7
Graduate students registered in School of Pure Science.....	13	25	26	28	36
Graduate students registered in other Schools.....	3	4	5	8	18
Undergraduates from Columbia College.....	37	29	14	24	24
Undergraduates from Barnard College.....	....	....	...	....	9
Students from School of Medicine .....	....	....	3	8	22
Students from Schools of Applied Science.....	....	....	9	10	9
Special students (graduates and undergraduates).....	6	9	9	7	31
Totals.....	59	67	66	85	149

A glance at the figures in the above table shows the sources of the decided increase of the past year as compared with previous years in the number of students pursuing work in the School. This increase is most marked in the number of graduate students, in the number of students from the College of Physicians and Surgeons, and in the number of special students.

Of the candidates for the higher degrees registered primarily in this School, 14 hold the degree of A.B., 13 the degree of B.S., 3 the degree of Ph.B., 3 the degree of E.E., 3 the degree of M.E., and 1 holds the degrees of E.M. and Met.E. Of these same candidates, 12 hold the degree of A.M., 3 the degree of M.S., and 2 the degree of M.D.

Of the special students registered primarily in this School, 6 hold the degree of A.B., and 5 of these hold the degree of A.M., while the remaining 13 hold no degree.

Of the 42 students of these two classes holding degrees, 7 come from Columbia College, and 3 come from the Schools of Applied Science, while the remaining 32 come from twenty-two different institutions of seventeen different States.

Of the total number of students in the School, 22 hold primary degrees from Columbia, 61 hold primary degrees

from other institutions, and 47 received primary degrees from Columbia at the commencement of this year. It appears, therefore, that 130 of the 149 students in the School, or 87 per cent. of them, either held or were candidates for a first degree.

The following table gives the names and the titles of the dissertations of candidates upon whom the degree of Doctor of Philosophy was conferred on recommendation of the Faculty of Pure Science. In addition to the candidates mentioned in this table, five others who were examined for the doctorate were unable to complete the publication of their dissertations in time for the annual commencement.

Candidate	Title of Dissertation
Albert Schneider, M.D., College of Physicians and Surgeons, Chicago, 1887; M.S., University of Minnesota, 1894.	A Text-book of General Lichenology.
Henry Clapp Sherman, B.S., Maryland Agricultural College, 1893; A.M., Columbia University, 1896.	The Insoluble Carbohydrates of Wheat.
Frank Leo Tufts, B.S., Antioch College, 1891; A.B., Harvard University, 1896; A.M., Columbia University, 1896.	The New Flicker Photometry.
Ansel Augustus Tyler, A.B., Lafayette College, 1892; A.M., 1895.	The Nature and Origin of Stipules.

Similarly, the following table presents the names and the titles of the essays of candidates recommended for and receiving the degree of Master of Arts:

Candidate	Title of Essay
Frederick Coykendall, A.B., Columbia College, 1895.	The History and Construction of the Spectroscope.
Carrie Hammerslough, A.B., Columbia University (Barnard College), 1896.	Continuity.
Daniel W. Harrington, M.D., Columbia University, 1888. A.B., Leland Stanford, Jr., University, 1896.	The Innervation of the Heart of the Guinea-Pig.

Candidate	Title of Essay
William Henry Hays, A.B., Columbia College, 1896.	The Determination of Division Errors by Comparing two Scales.
Ernest Valentine Hubbard, A.B., Columbia College, 1894.	The Early Development of Fundulus Heteroclitus.
Walter Coluzzi Kretz, A.B., Columbia College, 1896.	Recent Astrophotographic Work at Columbia University Observatory.
Leffert Lefferts, A.B., Columbia College, 1893.	Candles.
Charles Paul Ernest Peugnet, C.E., Columbia University, 1895.	Design of Electric Lighting Plant with Water Turbine Motor.
Frank Schlesinger, B.S., College of the City of New York, 1890.	Correction of Photographic Measures for Refraction.
Joseph Suydam Stout, Jr., A.B., Columbia College, 1895.	The Primary Battery.

The number of separate courses of instruction offered by the departments in the School remains about the same as stated in my last report, although the tenders of courses of several departments have undergone more or less readjustment to meet the needs of the growing interrelations of the different branches of the University. The distribution of the courses in the several departments as presented in our Announcement for 1897-98, and the actual number of courses given by each department during the past year, are shown in the following table. It should be remarked, however, that this table does not give a complete idea of the activities of the several departments, many of which give collegiate or professional courses not included in our Announcement. This table shows rather the numbers of advanced collegiate and graduate courses offered by the School, and the total number of courses—including graduate, collegiate, and professional—given by each department.

In addition to the courses referred to in the following table, two courses in physical anthropology have been given during the year by Dr. Franz Boaz, lecturer in anthropology; while by means of coöperation with the Schools of Philosophy and Political Science our Announcement for 1897-98 presents a tender of five courses in Anthropology, three of which are offered by Dr. Boaz.

Department	NUMBER OF COURSES OFFERED		Number of Courses Given during 1896-97
	Graduate	Collegiate	
Mathematics,	7	2	13
Mechanics,	16	2	11
Physics,	30	1	18
Chemistry,	19	6	
Mineralogy,	7	3	6
Astronomy,	3	3	5
Geology,	6	2	7
Zoölogy,	9	3	8
Botany,	4	8	12
Physiology,	5	..	5
Anatomy,	11	4	15
Bacteriology,	2	..	2
Totals,	119	34	...

By consent of the departments concerned, and with the approval of the President, thirty-seven courses of lectures on graduate subjects of study in the School have been made available to properly qualified auditors. Hereby it is hoped that a wider interest in and a more general knowledge of science may be disseminated, without diminution of the arduous efforts essential to the highest function of our Faculty—the prosecution of research. The distribution of these courses in the departments is as follows: in Mathematics, 8; in Mechanics, 11; in Physics, 1; in Astronomy, 4; in Geology, 4; in Zoölogy, 9.

For details concerning the work of instruction, the investigations, the publications, the communications to scientific societies, the field explorations, etc., of members of the School, attention is invited to the departmental reports which follow. These details in the aggregate embrace a wide range of scientific activities, and afford an impressive and gratifying idea of the rapid growth of opportunities afforded by the School, for the pursuit of advanced scientific work. With respect to publications, it is worthy of remark that twelve volumes of treatises and text-books have been issued by members of the School during the year, while the number of minor publications is more than one hundred.

Referring again to the departmental reports for details of acknowledgment, I beg to mention here with warmest ap-

preciation the financial gifts of Miss Catherine W. Bruce, Mrs. Esther Herman, Mr. F. Augustus Schermerhorn, and Rutherford Stuyvesant, Esq., in aid of the work of the Department of Astronomy; of Hon. Wm. E. Dodge for maintenance of a table at Naples Zoölogical Laboratory; and of the Trustees and other friends in aid of the expeditions of the Department of Zoölogy to Puget Sound. I am sure also that I express the unanimous sense of the Faculty in commending the enlightened liberality of President Jesup of the American Museum of Natural History, at whose expense the anthropological expedition to the northwest coast has been recently sent under the immediate charge of our colleague, Dr. Boaz. This enterprise cannot fail to be of great value to both the Museum and the University.

A period in the history of the School of Pure Science may be said to terminate with the close of the present academic year. This period has been one of organization, development, and adjustment. Starting five years ago with a representation of three departments only and with untried relations to the other branches of the University, the School has now attained the harmonious coöperation of twelve different departments, and a clearly defined status in the University system. Henceforward, therefore, under the inspiring auspices of the new site, the energies of the Faculty may be devoted without serious hindrance from administrative details to the more important work of instruction and investigation.

Very respectfully submitted,

R. S. WOODWARD,

*Dean.*

## REPORTS OF DEPARTMENTS.

## DEPARTMENT OF HUMAN AND COMPARATIVE ANATOMY.

Professor GEORGE S. HUNTINGTON.

*1. Educational Staff of Department.*

The Department sustained a severe loss through the death of one of its most valued instructors, Dr. Douglas Ewell, Assistant Demonstrator of Anatomy. He was a most able and faithful teacher, and during his service in the University endeared himself alike to his associates and students. The vacancy caused by his death has been filled by the appointment of Dr. Geo. W. Crary.

*2. Courses of Instruction.**(a) University Courses :*

Eleven students have taken advanced courses during the year in the Laboratory for Morphological Research, divided as follows :—

Undergraduates, taking advanced courses, as minor for the M.A. degree :

Course No. XIII. Comparative Neurology : two students.

Course No. XIV. Comparative Myology : one student.

Graduates, candidates for the M.A. degree :

Course No. IX. General Morphology : two students.

Special courses in Morphology, taken by students not candidates for a degree :

Course No. XV. Morphology of the Auditory Apparatus : two students.

Course No. XVII. Morphology of Female Uro-Genital Tract : one student.

Course No. XIV. Comparative Myology : one student.

*(b) Collegiate Courses :*

During the year collegiate Courses Nos. I. to IX. inclusive have been given.

### *3. Work of Fellow.*

Dr. J. A. Blake has prosecuted an important morphological research during the year, as Alumni Association Fellow in Anatomy, on the Endyma, with especial reference to the metapore. The work is designed to extend over two years. In addition, Dr. Blake has concluded an investigation of the topographical relations of the adult Mediastinum and the upper Thoracic aperture, which will be published in the Proceedings of the Association of American Anatomists.

### *4. Museum and Research Work.*

The work of the Museum of Human and Comparative Anatomy has progressed well during the year as far as the accession of new material and preparations is concerned. The Department is, however, much hampered by the lack of museum cases. The cases transferred from the old museum are more than filled, and the accessions to the collection must now be stored until the equipment of the new building is completed. The Department hopes that a moderate number of properly constructed new cases may be obtained soon, as much valuable material is at present stored at considerable risk of breakage and deterioration. In the same way it is highly desirable to equip the portion of the basement designed for the reception of the Osteological reference collection. The material contained in the Museum has been used extensively for the illustration of practical courses and demonstrations. In addition the following Museum lectures have been given during the year, based on series contained in the collection.

1. Morphology of the Ileo-Colic Junction in Vertebrates. 3 lectures to the second-year class.
2. Bronchial Tree and Pulmonary Vascular Supply in Mammalia. 2 lectures to the second-year class.
3. Morphology of the Mammalian Seminal Vesicles. 1 lecture to the second-year class.

4. Human and Comparative Anatomy of the Female Genito-Urinary Tract. 3 lectures, by courtesy of the Department of Obstetrics, to the third-year class.

The Museum was represented at the fourth annual exhibition of the New York Academy of Sciences, held in April of this year, by a series of casts of the adult thoracic cavity and contents, prepared by Dr. J. A. Blake. These casts form a most valuable addition to the collection. Other important series of completed preparations which have been added to the Museum during the year comprise the following:

Additions to series of Ileo-Colic Junction and Alimentary Tract.  
Series of Human Myological variations and corresponding Comparative Myological series.

Visceral Anatomy of American Reptiles, especially of the Pit Vipers.

Human and Comparative Anatomy of the Female Genito-Urinary Tract.

Lantern-slides have been made of many of these preparations by Dr. Leaming, rendering the material available for presentation to a large class.

The accessions of comparative anatomical material have been numerous and very valuable.

Among the more important Primates may be mentioned:

Two adult skeletons of *Gorilla gina* and a young individual in the flesh.

Viscera of *Simia satyrus* and *Troglodytes niger*.

Skeleton of *Hylobates lar* and young *Hylobates mulleri* in the flesh.

Skeleton of *Simia satyrus*.

Of Lemuroidea the following in the flesh:

*Cheiromys*, *Perodicticus*, *Tarsius spectrum*, *Nycticebus tardigradus*, *Stenops* and *Loris*, *Lemur varius*.

Of Edentates received in the flesh the following are especially important:

*Myrmecophaga jubata*, *Tamandua bivitata*, *Cyclothorus didactylus*, *Manis longicauda*.

The following papers have been presented during the year by officers of the Department, based on the research work of the Laboratory :

- G. S. Huntington: "Cerebral Fissures and Gyres of two Brains from Natives of New Guinea."  
 G. S. Huntington: "Corrosion Anatomy, Technique, and Mass."  
 G. S. Huntington: "Ventral Version of Secondary Fore-brain."  
 J. A. Blake: "Topography of the Mediastinum and Superior Thoracic Aperture."

These four papers were presented before the Ninth Annual Meeting of the Association of American Anatomists, held at Washington, D.C., in May of this year.

The following papers were published during the year :

- G. S. Huntington: "On Some Points in the Formation and Distribution of the Cervical Plexus in Cynomorphous Monkeys."  
*Trans. N. Y. Ac. Sciences*, vol. xvi., March 3, 1897.  
 G. S. Huntington: "Contributions to the Myology of Lemur Bruneus."  
*Anat. Anz.* (abstract) xiii., Bd. Nr. 8 and 9, 1897, and *Trans. N. Y. Acad. Sc.* (in press).  
 G. S. Huntington: "Topographical Anatomy of the Lungs and Mediastinum in the Fœtus at Term and in the New-born Child."  
*Report N. Y. Lying-in Hospital*, 1897.

##### 5. Departmental Library.

The Department takes great pleasure in acknowledging the receipt of a large number of very valuable anatomical books and periodicals from Dr. F. H. Markoe. The collection comprises, among others, a complete set of the *Journal of Anatomy and Physiology* and of the *Anatomischer Anzeiger*.

The need of a good working anatomical library in direct connection with the Research Laboratory is very apparent. The Department has prospects of eventually acquiring such equipment, and Dr. Markoe's gift will form a most valuable beginning.

#### 6. *Recommendations.*

While the facilities for practical work are very satisfactory as regards dissecting-room space, the Department is obliged to call attention to the urgent need of an enlarged and improved plant for the preservation of Anatomical Material. The thorough preservation of all available material is a matter of vital importance. The present cold storage-room does not afford sufficient space for the reception of the material which can be obtained.

The Department recommends urgently that the present room be enlarged by including a portion of the adjoining basement. An improved method of storing material has also been devised, and should be adopted. The Department also desires to again emphasize the need of equipment in cases for the Museum and Anatomical Building. The lack of proper cases will eventually cause considerable loss by deterioration and breakage of the preparations.

### DEPARTMENT OF ASTRONOMY.

Professor J. K. REES.

#### 1. *Educational Staff.*

John Krom Rees, Ph.D., Prof. of Astronomy.

Harold Jacoby, Ph.D., Adjunct Prof. of Astronomy.

Herman S. Davis, Ph.D., Tutor in Astronomy.

For our work in the School of Engineering under the Faculty of Applied Science we had the assistance, during the Summer School in Practical Geodesy (1896), of

Charles Derleth, C.E.,  
Charles Rodenberg, C.E., } at Lake Sunapee.

Geo. H. Ling, Ph.D.,  
W. C. Kretz, A.B., } in N. Y. City.

2. *University and Collegiate Courses.*

Instructors	Courses	Hours per Week	Students
Prof. Rees assisted by Dr. Davis	I. General Astronomy	2 and conferences at the Observatory	8. B.A. Seniors 2. Specials
Dr. Davis	II. Practical Astronomy	2 with Observatory work	1 Ph.D. 1 Special
Profs. Rees and Jacoby	III. Geodesy 3d year	2	22 C.E.
Profs. Rees and Jacoby	III. Geodesy 4th year	2 1st term	18 C.E.
Profs. Rees and Jacoby Dr. Davis and assistants	III. Geodesy Summer Class June 1, to July 11, 1896		20 C.E.
Prof. Rees	IV. Advanced Practical Astronomy	2	1 Ph.D. 1 A.M.
Prof. Jacoby	VI. Theory and Methods of Reduction of Photo- graphic Star Plates.	1	3 Ph.D. 1 A.M.

3. *Work of Fellow and of University Scholar.*

Frank Schlesinger B.S., is the University Fellow in Astronomy. In Astronomy IV he has made observations with the Zenith Telescope for latitude. Under Astronomy VI he has investigated the scales of the Repsold Measuring Micrometer and has measured with that instrument the unmeasured plates of the Praesepe Cluster taken by Rutherford. Mr. Schlesinger took the degree of Master of Arts at the last Commencement. He submitted an excellent essay on "Correction of Photographic Measures for Refraction." Mr. Schlesinger will be ready to take the degree of Doctor of Philosophy next February.

The University Scholar is W. C. Kretz, A.B. He took his Master of Arts degree at the last Commencement. His essay was on "Recent Astrophotographic Work at the

Columbia University Observatory." Mr. Kretz has worked on the scales of the Repsold machine, and in measuring Rutherford plates. Mr. Kretz will be ready to take the degree of Doctor of Philosophy in February, 1899.

4. *The Researches and Publications.* The observations for determining the Variation of Latitude at New York City, and for the Constant of Aberration, have been carried on during the year, June 20, 1896, to June 20, 1897, by Professor Rees and Dr. Davis. Last summer, while Dr. Davis was in Europe, the observing was done by Professor Rees alone. The number of "pairs" measured was 968.

The work has been continued at the Royal Observatory at Naples. The results of the observations taken between May 1, 1893, and July 1, 1894, have been published in the *Astronomical Journal* and elsewhere. A paper giving the results by Professors Rees and Jacoby and Dr. Davis was read before the National Academy at the April meeting in Washington. The reductions on the observations made since July 1, 1894, are well advanced, and will be ready for publication shortly. Such publication has been made possible by the generous gifts of Miss Catherine W. Bruce and Mrs. Esther Herrman, of New York City. The calculations have been made largely by Miss Harpham, the Computer at the Observatory. Mr. F. Augustus Schermerhorn's contributions have enabled the Observatory to obtain the services of the Computer.

The lecture by Professor Rees on "Variation of Latitude," given before the N. Y. Academy of Sciences, has been published in *Science* and republished by the Smithsonian Institution. Lectures were delivered by Professor Rees before the Brooklyn Institute and N. Y. Academy of Sciences. The titles were: "Photographing the Stars" and "The Discovery and Care of the Minor Planets."

Professor Jacoby has during the year directed the computing done by Miss Harpham and Miss Pierce. He has also had in charge the work done by Miss Furness of Vassar College on the measurements of the polar plates taken for him by Dr. Donner of Helsingfors.

The Observatory has published Contributions Nos. 10 and 11, by Professor Jacoby, "On the Reduction of Stellar Photographs with special reference to the Astro-Photographic Catalogue Plates," and "On the Permanence of the Rutherford Photographic Plates."

Dr. H. S. Davis has been at work on the rereduction of Piazzi's catalogue, has completed papers based on the Rutherford plate and measures on "Parallax of 61 Cygni," "Catalogue of Stars about 61 Cygni," "Catalogue of Stars about Bradley 3077," and has given five lectures in the course of "Free Lectures for the People."

5. The department carried on during the summer of 1896 the usual Summer Class in Geodesy.

I have reported as to this work to the Dean of the Faculty of Applied Science.

6. The department is in great need of new instruments, which should be placed in an adequate observatory. The manner of development must depend on the amount of money that will be given for such development. There ought to be two Astronomical Fellowships, in order that we may regularly rely on having some good students.

7. Rutherford Stuyvesant, Esq., has generously continued his gifts to the fund for the reduction and publication of the Rutherford Photographic Measures. F. Augustus Schermerhorn, Esq., has donated the salary of a Computer at the Observatory. Miss Bruce has contributed \$1500, and Mrs. Herrman \$100, to the fund for publication of the Observations on Variation of Latitude.

#### DEPARTMENT OF BOTANY.

Professor LUCIEN M. UNDERWOOD.

DEAR SIR :

I have the honor to make the following report from the Department of Botany for the Academic year of 1896-97.

The staff of the department, in addition to the professor in charge, has consisted of Dr. C. C. Curtis, Tutor in Botany, and Dr. John K. Small, Curator of the Herbarium, both of

whom have rendered exceptional service in the duties of instruction and administration. My own term of service dates from July 1, 1896.

In connection with the School of Pure Science, twelve courses have been given. Of these, Courses I, II, and VII were given jointly by Professor Underwood and Dr. Curtis. Courses III, V, VI, XI, and XIII were given by Professor Underwood; Courses IV and VIII by Dr. Curtis, and Course IX by Dr. Small. The number of students electing each course is indicated below in tabular form.

	Seniors.	Grad.	Others.
I. General Botany.....	1		
II. General Botany.....	5		2
III. Lectures on General Botany..	4		35
IV. Plant Anatomy and Physiology			2
V. Systematic Botany.....		1	
VI. Economic Botany.....	2		
VII. Cryptogamic Botany.....		3	
VIII. Plant Anatomy (advanced)...		3	
IX. Families of Spermaphytes....		1	
XI. General Morphology (research)		1	
XII. Botany of Restricted Area (research).....		1	
XIII. Monograph (research).....		3	

The Fellow in Botany, Mr. Per Axel Rydberg, has devoted the greater portion of his time to the revision of the tribe *Potentilleæ*, of which he has prepared an elaborate monograph which will be illustrated with nearly a hundred plates. While he has completed all the work leading to the doctor's degree, there remains the printing of his thesis. In addition to the work on his monograph, Mr. Rydberg spent the summer of 1896 in field work in Montana, and has again entered the same field with the intention of preparing a flora of that interesting region.

Dr. Carlton C. Curtis spent two months of the vacation in the laboratory of Professor Darwin at Cambridge, England, and the remainder of the vacation visiting laboratories at Brussels, Bonn, Leipzig, Tübingen, and Berlin. During the

winter he has carried on investigations on the capillarity of plant tissues with special reference to the transpiration current. He has also published articles on the Physiological Aspects of Growth. His *Text-Book of General Botany* (8vo., pp. 360), is published and will supply a much needed work for students in the first year. During the spring he has put up some two hundred jars of material for laboratory study, and will give attention during the summer to supplying the new laboratories with an abundance of material for work. He expects to spend some two months at Woods Holl in ontological investigations of two special plant forms. He has shown himself a most skilful laboratory director and investigator.

Dr. John K. Small has had charge of the Herbarium as Curator, and has conducted a single course on the families of the higher plants for which he is specially prepared. In addition to attending to the duties of Curator and overseeing the preparation of plants for the herbarium, he has continued his studies on the Botany of the Southeastern States, and has published several papers on the Southeastern Flora. He also discussed several topics relating to the flora of Georgia before the American Association for the Advancement of Science at its Buffalo meeting. By his careful management of the herbarium and his clear understanding of its needs, he has rendered the collections widely serviceable and easily accessible, and has added to the collections to the extent of some 15,000 specimens.

Dr. Albert Schneider, ex-Fellow in Botany, has published his thesis from the Department, under the title of *A Text-Book of Lichenology*, forming an elaborate octavo volume of 230 pages and 76 plates. Dr. Schneider has accepted the Professorship of Botany and Bacteriology in the Chicago College of Pharmacy.

Mr. A. A. Tyler, graduate student, has completed his course, and his thesis is an elaboration of "The Nature and Origin of Stipules," and was published in the *Annals of the New York Academy of Science*. He has accepted a position as Instructor in Botany in Union College.

Mr. A. J. Grout, graduate student, has completed his course, with the exception of the publication of his thesis, "A Revision of the *Isotheciaceæ* and *Brachytheciaceæ* of North America," which is now in process of publication as one of the *Memoirs of the Torrey Botanical Club*. Mr. Grout has also published some of the results of his study of economic fungi during the vacation of 1896.

Mr. Marshall A. Howe, Fellow-elect in Botany, has given his year to the study of the Bryophyte Flora of the Pacific coast, especially California, where he has spent several years in active field work. Among the interesting results of his study is the elucidation of a new and peculiar genus of *Hepaticæ* from the Pacific coast, which is published in the *Bulletin of the Torrey Botanical Club*. He will devote the summer to the elaboration of his extensive collections made in California.

Mr. E. O. Wooton, graduate student, has devoted his attention largely to the flora of New Mexico, in which he has made extensive field observations, extending over several years. As a part of the work leading to the degree of Ph.D., he will spend the summer of 1897 in active field work in New Mexico, and will elaborate its peculiar flora as his thesis.

The publications of the Department, in addition to those above mentioned, consist of twenty-five parts of the *Contributions from the Department of Botany of Columbia University*, forming Volume V of that series.

It is proper also to mention here the elaborate work of Dr. Britton, *The Illustrated Flora of Northeastern America*, of which two volumes have appeared during the year, aggregating 1225 large octavo pages, and illustrating 2892 species of our Northeastern flora, many of which had never been figured before. The third and final volume of the work is already well under way.

In addition to the elaboration of new courses of study and plans for the new laboratories at the new site, Professor Underwood has published (jointly with Professor F. S. Earle of Alabama) a work on the *Fungi of Alabama*, of some

187 pages, and has, besides, published several results of investigation in cryptogamic subjects in the *Botanical Gazette* and the *Bulletin of the Torrey Botanical Club*. He will spend the summer vacation at Kew, examining certain little understood types of American fungi and ferns.

The removal to the new site and the preparation of space for proper work, as well as the elective system now possible, have made it desirable to extend the undergraduate courses in Botany, so that three full years of work will hereafter be required before entering into graduate (research) work. With this in view the courses have been remodelled so that undergraduates may have a fixed requirement for two years of work, and for the third year may vary the trend of their course in the direction of the morphology of the lower plants, the higher plants, or toward Plant Physiology. The graduate courses have similarly been modified so as to permit the election of work in the directions of plant physiology and the morphology and taxonomy of the lower plants, which have hitherto been impracticable.

The removal to the new site, since it involves greatly extended laboratory space, also demands a much more extensive equipment for the Department, particularly in the direction of plant physiology, in which there have been no opportunities for work in our present crowded and uncomfortable quarters. The more elastic nature of the elective system permitting the students to enter the subject of Botany in the Sophomore year will demand still further facilities for microscopic work, more microscopes, microtomes, and other apparatus.

#### DEPARTMENT OF CHEMISTRY.

Professor C. F. CHANDLER.

The following changes were made in the corps of Instructors: Samuel A. Tucker, Ph.B., was made Assistant Demonstrator of Chemistry to succeed Winfield Johnson, deceased.

Benjamin M. Jaquish, B.S., was made Assistant Demonstrator in Toxicology to succeed Mr. Tucker, promoted.

Arthur Van Gelder, Ph.B., was made Assistant in Chemistry.

George Muller, Ph.B., was made Lecturer in Chemistry.

All the prescribed courses of instruction in the Department of Chemistry were given during the year and were attended chiefly by students under the Faculties of Columbia College and the Faculties of Medicine and Applied Science.

Several students from the Faculty of Pure Science pursued advanced work in Theoretical Chemistry and in Analytical Chemistry.

Mr. H. C. Sherman continued his investigations for the degree of Doctor of Philosophy. Mr. Sherman presented his thesis, which was published in the *Journal of the American Chemical Society*, for 1897.

The following papers have been published by officers of the Department :

Notes on Assaying, by Professor Ricketts and Dr. Miller, Wiley & Co., 311 pages.

Notes on the Ferrocyanides of Zinc and Manganese, Dr. Miller, *Journal American Chemical Society*, vol. xviii.

On the Ferrocyanides of Zinc and Manganese, Dr. Miller and Dr. Mathews, *Journal American Chemical Society*, vol. xviii.

Table of Factors, Dr. Miller and Dr. Mathews, *Journal American Chemical Society*, vol. xviii.

Review and Bibliography of the Metallic Carbides, by J. Mathews. *Miscellaneous Publications of the Smithsonian Institution*.

Phthalimid, by Mr. Mathews, *Journal American Chemical Society*, vol. xviii.

Lectures on Alcohol and Fermentation, by C. E. Pellew, E.M., in *The Forum*, and in *The Popular Science Monthly*.

Radical changes have been made in the courses in Chemistry, theoretical and applied, which will be offered at the new site during the coming year. These have been fully

set out in the report of the Dean of the Faculty of Applied Science.

DEPARTMENT OF GEOLOGY.

Professor JAMES F. KEMP.

*1. Educational Staff of Department.*

There have been no changes in personnel the past year, the staff remaining: J. F. Kemp, Professor; Arthur Hollick, Tutor; Gilbert van Ingen, Curator. For 1897-98, Alexis A. Julien, Instructor, has been assigned to it.

*2. University and Collegiate Courses.*

A. UNIVERSITY COURSES

Geology III. Economic Geology. 21 hearers, viz:

- 16 Required from Faculty of Applied Science.
- 2 Seniors from the College.
- 2 Graduates, Candidates for Ph.D.
- 1 Special student.

Geology VI. Petrology. One graduate by special arrangement, the course not being regularly given.

Geology VIII. Comparative Geology. 5 hearers, all graduate students.

1 Minor for Ph.D.

4 Majors for Ph.D.

Also one assistant in fairly regular attendance.

Geology IX. Paleobotany. 2 hearers, graduates taking minors for Ph.D.

B. COLLEGIATE COURSES

Geology I. General Geology. 14 hearers, all College students, viz:

- 5 Juniors.
- 5 Seniors.
- 4 Specials.

Geology II. General Geology longer course. 45 hearers,  
all from the Faculty of Applied Science.

Geology IV. Petrography. 16 hearers.

15 from the Faculty of Applied Science.

1 graduate, candidate for Ph.D.

### *3. Work of the Fellow.*

The Fellow in Geology for 1896-97 has been David Hale Newland, A.B. (Hamilton). Mr. Newland was in the field in the Adirondacks with Prof. Kemp in August, 1896,—but returned to New York in September so as to perform the field-work attendant on his thesis. He had already had two years' study in Germany when he came to us, and was prepared to enter on his thesis work, the subject assigned him being "The Serpentine near New York City." He has been able to show the derivation of a large portion of these puzzling metamorphic rocks to be from basic igneous types, and has partially solved a very obscure problem in local geology. Mr. Newland's minors have been Analytical Chemistry and Mineralogy. His health broke down in the spring so that he was forced to defer his examinations for his Ph.D. until the fall of 1897. Mr. Newland has passed brilliant examinations in the courses in Geology (III and VIII) taken by him, and has been an excellent and faithful student.

### *4. Researches and Publications of the Department.*

Prof. Kemp went to Butte, Mont., with the Summer School in Mining and Geology in June, 1896, and on the way visited the Leucite Hills of Wyoming, some small but famous volcanic areas. His observations were amplified by later visits of two assistants, who collected specimens under his direction. The results, as elaborated last fall, threw much additional light on the petrography and nature of these rare rocks, and were presented to the Geological Society of America in December, 1895, and were afterwards published as cited below. The western trip also yielded notes for two papers before the New York Academy of Sciences, one on Butte, Mont., and one on a little-known district of Idaho, but

these were not intended for lengthy publication. Prof. Kemp was engaged in detailed geological mapping in the eastern Adirondacks during July and August, 1896, in preparing an Atlas folio for the U. S. Geological Survey. Probably two more summers' field-work will be required to complete the area. A paper on the Cambrian and Silurian topography of the eastern Adirondacks resulted, however, before the Geological Society of America, as cited below. Prof. Kemp issued in October, 1896, an elementary manual on rocks that has been well received. An elaborate paper on a series of very important magnetic iron ore deposits at Mineville, near Port Henry, N. Y., has been published in the *Transactions of the American Institute of Mining Engineers*. This is the result of visits to and study of the mines extending over five or six years. A number of shorter contributions have been made to various scientific publications, a part of which are cited below. A careful revision, almost amounting to re-writing, of the *Ore Deposits of the United States*, for a third edition, has occupied all the available time that could be taken from other duties.

Mr. Hollick has continued his work on the Cretaceous and Tertiary formations from New Jersey, through Staten Island, Long Island, Block Island, and Martha's Vineyard, and was in the field a good part of the vacation of 1896 studying them. He succeeded in discovering fossils on Block Island, and thus brought to light the first decisive evidence regarding the age of its clays, and made a notable advance in our knowledge. He has had a considerable share in an important controversy over the age of these clays, in opposition to views expressed by Prof. O. C. Marsh, of Yale. Several papers of record, aside from discussion in the scientific journals, have resulted as cited below. The most important work of the year has been, however, the issue of Monograph XXVI of the *U. S. Geological Survey*, entitled the "Flora of the Amboy Clays." This is a work which was left uncompleted by the late Professor Newberry. Mr. Hollick has edited the MSS., completed and amplified many descriptions and plates, and has brought the work to a successful

issue. His share in it has been done with almost filial regard for his honored teacher and friend, Dr. Newberry. The monograph is issued as by J. S. Newberry, edited by Arthur Hollick.

Mr. van Ingen has been kept too closely confined at his Museum duties and instruction to bring to completion any of the several investigations that he has in hand. The vacation of 1897, it is hoped, will bring them to fruition, but it may be stated that he has important and interesting work under way. His field-work is mentioned under the next topic.

Of Mr. Newland's work as Fellow, mention has been already made. Mr. T. G. White, who, while Assistant in the Department of Physics, is pursuing graduate work in this department, has continued his investigations on the Trenton faunas of the Lake Champlain valley. Some minor work has been done by our graduate students, but it is not far enough advanced for mention.

J. F. Kemp—"A Handbook of Rocks," pp. 176. Oct., 1896.

"The Glacial or Post-Glacial Diversion of the Bronx River from its Old Channel." *Trans. N. Y. Acad. Sci.*, xvi. (Jan. 22, 1897.) 18-24; illust. in text.

"The Leucite Hills of Wyoming." *Bull. Geol. Soc. Am.*, viii. (Feb. 25, 1897.) 169-182; Pl. xiv. and illust. in text.

"The Geology of the Magnetites near Port Henry, N. Y., and Especially Those of Mineville." *Trans. Am. Inst. Min. Eng.* Chicago Meeting, Feb., 1897. Reprint pp. 1-58; Pl. i.-xi., and illust. in text.

"Physiography of the Eastern Adirondacks in the Cambrian and Ordovician Periods." *Bull. Geol. Soc. Am.*, viii., 408-412; Pl. li.

- Arthur Hollick—"New Species of Leguminous Pods from the Yellow Gravel at Bridgeton, N. J." *Bull. Torrey Bot. Club*, xxiii. (Feb., 1896.) 46-49; Pl. cclviii., cclix.
- "Geological Notes. Long Island and Block Island." *Trans. N. Y. Acad. Sci.*, xvi. (Dec. 15, 1896.) 9-18.
- "Appendages to the Petioles of *Liriodendra*." *Bull. Torrey Bot. Club*, xxiii. (June, 1896.) 249, 250; Pl. cclxix., cclxv.
- "The Cretaceous Clay Marl Exposure at Cliffwood, N. J." *Trans. N. Y. Acad. Sci.*, xvi. (March 26, 1897.) 124-136; Pl. xi.-xiv. and illust. in text.
- J. S. Newberry and Arthur Hollick—"The Flora of the Amboy Clays." By J. S. Newberry, edited by Arthur Hollick. *Monograph*, xxvi., *U. S. Geol. Survey*. 4to, pp. 260. Pl. i.-lviii.
- David H. Newland—"Notes on the Eclogite of the Bavarian Fichtelgebirge." *Trans. N. Y. Acad. Sci.*, xvi. (Jan. 22, 1897.) 24-29.
- John Duer Irving—"The Stratigraphical Relations of the Brown's Park Beds of Utah." *Trans. N. Y. Acad. Sci.*, xv. (Sept. 25, 1896.) 252-259; Pl. xviii.

The publications of the department are distributed to its friends in a numbered series, divided into volumes. Six volumes have now been issued, of which two were separate and complete publications.

This department has endeavored to forward the researches of Professor Dean of the Department of Zoölogy, by placing at his disposal its rich collections of fossil fish, and several of his papers prepared in this way have been listed in the above series of contributions.

#### 5. *Field Explorations.*

Professor Kemp conducted a party of students from the School of Mines, during the last vacation, around Niagara

Falls, for two days. Subsequently they visited the quarries near Chicago, the Wyoming Bad Lands, and then for a week the exposures about Butte, Mont. A small squad went with him into Central Idaho, then through the Yellowstone Park and the Black Hills. In his field-work in the Adirondacks he had Mr. Newland with him in August, and Mr. Irving in September. During the fall and spring, geological excursions have been held on the clear Saturdays and holidays, the officers of the department sharing the work. Mr. Hollick worked during the vacation along the Sound and in New Jersey, as earlier stated; Mr. van Ingen made a collecting trip in July to Arkansas, and stopped at various places going and coming, to the great benefit of the Museum. Mr. Newland's field-work has already been commented on.

#### *6. Recommendations.*

This department greatly needs strengthening in lines covered by Physical Geography, or the New Geography as now understood, and, as has been annually brought out in these reports for several years, anxiously awaits such provision. Space has been assigned for this purpose in our new buildings, and a new department ought to be created. An adjunct professor of palæontology is also greatly desired.

#### *7. Miscellaneous Items of Interest.*

The collections of the department have been very notably increased the past year by our own gatherings and by gifts from graduates who are situated in regions of interesting geology. It has been the policy of the department to let no such man escape. Exchanges have also been instituted with colleagues both in this country and Europe, the more as it has been desirable to curtail our duplicates preparatory to removal.

## DEPARTMENT OF MATHEMATICS.

Professor J. H. VAN AMRINGE.

I submit herewith my report on the Department of Mathematics for the academic year 1896-7, so far as the operations of the same are related to the School of Pure Science.

1. The staff of the department the past year has been as follows :

J. H. VAN AMRINGE, Ph.D., L.H.D., LL.D.,  
 Professor and Head of Department.  
 THOMAS S. FISKE, Ph.D.....Adjunct Professor.  
 FRANK N. COLE, Ph.D.....Professor.  
 JAMES MACLAY, C.E.....Instructor.  
 J. BRACE CHITTENDEN, Ph.D.....Tutor.  
 JOHN E. HILL, Ph.D.....Tutor.

2. The following is an account, in tabular form, of the courses, number, and subjects, by whom given, and by how many attended :

## COURSES AND ATTENDANCE.

Instructors	Courses	Hours per Week	Students
	(Number and subject as in Catalogue, 1896-7)		
Dr. Hill	III. Theory of Equations and Solid Analytical Geometry	3	1 A.M. and Ph.D.
Prof. Van Amringe	IV. Differential and Integral Calculus	3	1 Special.
Prof. Fiske	XIII. Special Topics in Dif- ferential and Integral Cal- culus	3 (1st Term)	4 A.M. and Ph.D.
Prof. Fiske	XIV. Differential Equations and Applications	3 (2d Term)	5 A.M. and Ph.D.
Dr. Hill	XV. Higher Plane Curves	3	3 A.M. and Ph.D.
Prof. Cole	XX. Theory of the Complex, Variable, and Elliptic Functions	3	5 A.M. and Ph.D.
Prof. Fiske	XXII. Theory of Functions, Second Course	3	1 A.M. and Ph.D.

In addition to the courses noted above, the department has given four courses in the College and two courses in the Schools of Applied Science.

3. Meetings attended by the instructors and university students of the department were held at intervals of three weeks throughout the year, and at them the students were required to present lectures, reports, or essays upon previously assigned topics. Lectures were also occasionally delivered by the instructors. The following subjects were thus discussed :

- I. Classification of Algebraic Integrals..... Prof. Fiske.
- II. Theory of Substitutions ..... Prof. Cole.
- III. Theory of Invariants..... Dr. Chittenden.
- IV. The Surface of the Fifth Order..... Dr. Hill.
- V. Geometrical Interpretation of Inversion. Mr. Cottier.
- VI. Notes on Limiting Points..... Mr. Kasner.
- VII. Method of Quadric Inversion as applied  
to the Resolution of Higher Plane  
Singularities..... Mr. Berry.
- VIII. Differentiability of Continuous Functions. Prof. Fiske.
- IX. Propositions in Geometry of Space of  $n$   
Dimensions of Zero Curvature..... Mr. Keyser.
- X. Numerability of the Algebraic Numbers. Prof. Fiske.
- XI. Regular Figures in Space of  $n$  Dimen-  
sions ..... Prof. Cole.
- XII. On General Differentiation..... Mr. Kasner.

4. The following is a list of the mathematical publications of the members of the Department during the year :

#### PUBLICATIONS.

Prof. Thomas S. Fiske.—“Functions of a Complex Variable,” Chapter VI. of *Higher Mathematics*, edited by M. Merriman and R. S. Woodward, Wiley & Sons, pp. 226–302.—“Recent Text-Books of Geometry” (Review), *Science*, vol. iv., pp. 201–203.—“The Third Summer Meeting of the American Mathematical Society” (Re-

port), *Science*, vol. iv., pp. 441-444.—“The Straight Line as a Minimum Length,” *Science*, vol. iv., p. 533.—“The Buffalo Colloquium” (Report), *Bulletin of the American Mathematical Society*, vol. iii., pp. 49-59.—“The Length of a Curved Line,” *Science*, vol. iv., p. 724.—“Reply to Professor Halsted,” *Science*, vol. iv., pp. 917-918.—“Note on the Integration of a Uniformly Convergent Series through an Infinite Interval,” *Bulletin of the American Mathematical Society*, vol. iii., pp. 223-224.

Prof. F. N. Cole.—“Mathematical Papers Read at the International Mathematical Congress, held in Connection with the World's 'Columbian Exposition, Chicago, 1893'” (Review), *Science*, vol. iv., pp. 200-201.—“The Third Summer Meeting of the American Mathematical Society” (Report), *Bulletin of the American Mathematical Society*, vol. iii., pp. 1-9.

Dr. J. B. Chittenden.—“Trigonometry for Beginners” (Review), *Science*, vol. v., pp. 626-628.

Dr. John E. Hill.—“On Quintic Surfaces,” *Mathematical Review*, vol. i., pp. 1-59.—“Bibliography of Surfaces and Twisted Curves,” *Bulletin of the American Mathematical Society*, vol. iii., pp. 133-146.

During the past year Professor Fiske has continued his editorial work on the *Bulletin of the American Mathematical Society*, of which another volume has been completed. In this work he has had the coöperation of Professor Ziwet, of the University of Michigan, Professor Morley, of Haverford College, and Professor Cole, of this department.

5. During the past year Mr. Maclay, who has been absent on leave, has been in residence at the University of Berlin. He will resume his duties in the department in September. Mr. C. J. Keyser, a university fellow in mathematics, has been appointed to a tutorship for the coming year, to succeed Dr. Hill, who retired from the department. Mr. Ed-

ward Kasner, a graduate student, has been appointed a university fellow in mathematics for next year. Two former fellows have received appointments elsewhere: E. M. Blake, Ph.D. (1893), as instructor in mathematics at Purdue University, and G. H. Ling, Ph.D. (1896), as instructor in mathematics at Wesleyan University.

6. Of the ten university students who during the past year have pursued courses in mathematics, mathematics has been the major subject with three, astronomy with two, mechanics with four, and botany with one. One student, having mathematics as his major subject, has this year fulfilled the mathematical requirements for the degree of Master of Arts, viz.:

Edward Kasner,

College of the City of New York, B.S., 1896.

Minor subjects: Mechanics; Philosophy.

Essay: On General Differentiation.

#### DEPARTMENT OF MECHANICS.

Professor R. S. WOODWARD.

*Staff and Instruction.*—The teaching staff of the department, consisting of R. S. Woodward, M. I. Pupin, Joseph C. Pfister, and William H. Freedman, remained the same during the year as during the previous year. The School of Pure Science, however, was unfortunately deprived largely of the services of Professor Pupin. Owing to prolonged convalescence from his serious illness of the latter part of the previous year, he was unable to give any graduate courses in addition to the usual number of professional courses conducted by him under the Faculty of Applied Science.

The courses given by the department during the year, and the number and classification of students in attendance on each course, are shown in tabular form below. The numerals and titles of the courses are those given in the annual Catalogue of the University.

Instructors	Courses	Hours per Week	Students
Prof. Woodward	I. Analytical Mechanics	3	65 Eng., 2 Graduates
Mr. Pfister	II. Elementary Mechanics	2	19 A.B., 3 Specials
Mr. Pfister	III. Theoretical Mechanics	2	1 A.B., 1 Eng.
Prof. Pupin	IV. Thermodynamics	3, 1st half-year	54 Eng.
Mr. Pfister	V. Elementary Thermodynamics	2	2 A.B.
Prof. Pupin and Mr. Freedman	VI. Theory of Dynamo and Motor	3, 1st half-year	27 Eng.
Prof. Pupin and Mr. Freedman	VII. Theory of Direct Current Dynamo and Motor	3, 2d half-year	27 Eng.
Prof. Pupin	VIII. Theory of Alternators and Transformers	3, 1st half-year	31 Eng.
Prof. Pupin	IX. Theory of Variable Currents	3, 2d half-year	31 Eng.
Prof. Woodward	X. Advanced Theoretical Mechanics	2	6 Grad. Ph.D., 8 Eng.
Prof. Woodward	XI. Theory of the Potential Function	2	6 Grad. Ph.D., 6 Eng.

*Work of Fellow.*—Mr. Joseph G. C. Cottier, Fellow in Mechanics, has pursued with credit the major and minor subjects of his course and has continued his studies in the field of hydromechanics. In connection with these studies he has prepared an elaborate paper on “The Expression of the General Equations of Hydromechanics in terms of Curvilinear Co-ordinates.” This paper was read before the American Mathematical Society at its meeting of March 27, 1897, and it will be published in the Mathematical Review. Mr. Cottier has also prepared an abstract of the methods of his paper applicable to the dynamical problems presented by the terrestrial atmosphere for publication in the Monthly Review of the U. S. Weather Bureau. A noteworthy feature of this abstract consists in the fact that Mr. Cottier points out certain fundamental defects in the classic work of our fellow-countryman, the late William Ferrel, who has

long been justly regarded as the leading authority in dynamical meteorology.

*Publications and Investigations.*—The publications of members of the department made up to the end of the last calendar year are recorded in the University Bulletin and need not be included here.

Professor Woodward's paper on the Mathematical Work of the Smithsonian Institution, prepared for the volume commemorating the fiftieth anniversary of that bureau, has been recently published. A revised edition of the Geographical Tables of the Smithsonian Institution, prepared by Professor Woodward, has also been issued during the present year.

Professor Woodward has made a special study during the year of the mechanics of non-rigid rotating masses. In this work he has prepared two papers which will be presented before the American Association for the Advancement of Science at its meeting in August next under the following titles: Modification of the Eulerian cycle due to inequality of the equatorial moments of inertia of the earth: Integration of the equations of rotation of a non-rigid mass for the case of equal principal moments of inertia.

Mr. Pfister has devoted much time and research to his bibliography of mechanics, which now embraces about five thousand titles.

#### DEPARTMENT OF MINERALOGY.

Adj. Professor ALFRED J. MOSES.

The teaching staff of the Department during the year 1896-97 consisted of Professor Egleston, Professor Moses, Dr. Luquer, and Mr. Whitlock. Dr. Egleston, the founder of the School of Mines and head of this Department for thirty-three years, resigned on account of ill health and has been made Professor Emeritus, and Adjunct Professor Moses has been appointed Professor of Mineralogy from July 1, 1897.

In addition to the regular under-graduate work the fol-

lowing courses of instruction have been taken during the year :

Courses.	Students.
I. Blowpipe Analysis.	2 Seniors.
II. Crystallography.	2 Seniors.
III. General Mineralogy.	1 Special.
IV. Descriptive and Determinative Mineralogy.	1 Candidate for A.M.
VI. Optical Mineralogy.	1 Candidate for A.M.
VIII. Physical Crystallography.	1 Candidate for Ph.D.

Dr. Heinrich Ries, Honorary Assistant in Mineralogy, prepared for the Department a summary of the publications on Synthetic Mineralogy and has also assisted in the selection of specimens for the new dynamic collection.

Much of the time usually spent on original work has been necessarily devoted to planning the rearrangement of the collection and other details for the new site.

A second edition of Moses and Parsons's *Elements of Mineralogy, Crystallography, and Blowpipe Analysis* has been issued. Professor Moses has also published the first portion of a work on the *Characters of Crystals*, and a paper on "Recent Apparatus and Methods in the Study of Crystals." Dr. Luquer has completed a text-book on *Minerals in Rock Sections* and a table for the Optical Determination of Minerals in Rock Sections.

The undergraduate courses in the department have been made electives in the new curriculum of the College, and the Faculty of the College also approved, at their meeting of October 23d, a course in General Mineralogy designed as an introductory course to mineralogical work under the Faculty of Pure Science.

In the revision of the Chemical course there has been added, for students in Organic Chemistry, a course in Physical Crystallography.

The mineral collections will occupy at the new site a room 50' x 75' with a narrow gallery on one side. This will permit an expansion of about ten cases. Twenty-four new cases are to be built which will be modelled after the cases at the new National Museum at Prague. The collection, which now contains nearly thirty thousand specimens, will be rearranged to meet the varied demands of University work and will consist of:

1. *A Systematic Collection* composed of those specimens of each obtainable species which best illustrate the physical and chemical characters of the species. The order chosen might be called Groth modified by Dana and the proportionate space allotted to each group will conform to the average of three of the great collections of the world.

2. *An Economic Collection* of ores, building materials and minerals used in chemical industries, in which especial attention will be paid to the ordinary crystals and massive varieties and to localities. The order adopted is that of the text-book used in the engineering and chemical courses.

3. *Introductory Collection* illustrating history and characters of minerals.

4. *Dynamic Collection* illustrating the genesis and alteration of minerals.

In the gallery there will be small special collections of Crystals, Artificial Minerals, and New York City Minerals.

It is proposed to transfer to the department from the University Library, all periodicals, monographs, and special works on mineralogy and crystallography, with such current text-books as are desired. The large card catalogue is being pushed to completion, and now comprises nearly 20,000 cards.

The following are some of the new pieces of apparatus acquired during the year:

*No. VI. Fuess Microscope* with simultaneously rotating nicols.

*Six Seibert lithological miscropes, 11 A.*

*Klein's universal rotation apparatus for crystals*, especially for determination of optical principal sections and measure-

ment of angles between optic axes in liquids of high index of refraction.

*Klein's universal rotation apparatus for thin sections*, especially for exact orientation of haphazard sections and determination of their optical constants.

*Traube's apparatus for darkening field* of goniometer.

*Laspeyere's burners for monochromatic light. Lamp for goniometer.*

*Attachment for converting Fuess goniometer into an axial apparatus.*

*Attachment for deliquescent crystals* Fuess goniometer.

*Von Federow Mica wedges* for measuring strength of double refraction.

*Models of positive and negative uniaxial indicatrices and of the biaxial indicatrix* with sections normal and oblique to optic axes.

*Apparatus for electrical heating* on stage of microscope.

*Total reflectometer.*

*Photographic camera for microscope.*

*Collimator with special attachments.*

*New Form of Fuess Polariscopes.*

*Table for Camera Lucida drawings.*

*Pair of Fresnel Prisms.*

The collections of crystal models and mineral sections have also been made more complete.

#### DEPARTMENT OF PHYSICS.

Professor OGDEN N. ROOD.

#### LECTURE COURSES.

*Course I*—General Physics—Sound and Heat (First Half-year);  
Light and Electricity (Second Half-year).

Prof. Rood and Mr. Gordon.

First-Year Class, Schools of Applied Science.. 72

Seniors in Columbia College..... 5

Specials in Columbia College..... 3

Special, School of Pure Science..... 1

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Total..... 81

*Course II*—Sound (First Half-year) ; Magnetism and Electricity  
(Second Half-year).

Prof. Rood.

Seniors in Columbia College.....	2
Juniors in Columbia College.....	7
Sophomore in Columbia College.....	1
Freshman in Columbia College.....	1
Specials in Columbia College.....	6
School of Pure Science, Candidates for degrees	2
School of Pure Science, Special.....	1

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Total ..... 20

*Course III*—Electricity and Exact Electrical Measurements.

Prof. Hallock.

Second Year Class, Schools of Applied Science 72

*Course IV*—Light (First Half-year), and Heat (Second Half-year).

Prof. Rood.

Seniors in Columbia College.....	3
Specials in Columbia College.....	2
School of Pure Science, Candidate for AM....	1
School of Pure Science, Special.....	1

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Total..... 7

*Course V*—Modes of Constructing and Designing Apparatus.

Prof. Hallock.

Specials, School of Pure Science.....	3
Candidates for A.M. and Ph.D.....	2
Students in Schools of Applied Science (optional).....	3
Freshman in Columbia College.....	1

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Total..... 9

*Course VI*—The Steam Engine (Second Half-year).

Mr. Gordon.

School of Pure Science, Specials.....	2
Columbia College, Special.....	1
Columbia College, Senior.....	1
Schools of Applied Science (optional).....	4

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Total..... 8

*Course VII*—Electrical Manipulation (First Half-year); Theoretical Comparison of Electrical Methods (Second Half-year).

Mr. Parker.

First Half-year, Post-Graduate student. ....	1
Second Half-year, Students in course in Electrical Engineering. ....	17

Total ..... 18

*Course VIII*—Undulatory Theory of Light (Second Half-year).

Prof. Hallock.

School of Pure Science, Graduate students. ....	7
School of Pure Science, Special. ....	1
Columbia College, Freshman. ....	1

Total ..... 9

With the exception of the first-year Class in the Schools of Mines, of Chemistry, and Engineering, and a few advanced students, those in attendance on the foregoing courses received instruction in practical work in the laboratories of the department. The laboratory courses and the number of students attending them are summarized as follows:

#### LABORATORY COURSES.

Two (2)-hour course.

Seniors in the College. ....	7
Juniors in the College. ....	7
Freshman in the College. ....	1
Specials in the College. ....	9
School of Pure Science. ....	3

Total ..... 27

Two (2)-hour course, advanced work.

Seniors in the College. ....	3
School of Pure Science, Special. ....	1

Total ..... 4

Four (4)-hour course, advanced work.

School of Pure Science, Candidate for A.M....	1
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Six-hour course.

Sophomore in the College. ....	1
School of Pure Science, Special. ....	1

Total ..... 2

Schools of Applied Science,	
Second-Year Students,	
Course in Electrical Engineering.....	34
Course in Civil Engineering.....	16
Course in Mining Engineering.....	12
Metallurgy.....	2
Chemistry.....	11
Total.....	75
First-Year Student in Electrical Engineering..	1
Fourth-Year Students,	
Engaged in special thesis work.....	2
College of Physicians and Surgeons,	
First-year students actually attending in the	
Laboratory.....	242
Course IX.....	1
Course XII.....	1
Course XIII.....	1
Course XXVI.....	1
Course XXVIII.....	1
Course XXIX.....	1
Total.....	6

## COURSES TAKEN BY GRADUATE STUDENTS.

F. L. Tufts, A.M., Fellow in Physics. Candidate for Ph.D., Physics Major; Courses V, XIII, XX, XXVI, and research work.

H. E. Houston, A.M. Candidate for Ph.D., Physics Minor; Courses V, VIII, and XII.

W. C. Kretz, A.B. Candidate for A.M.; Course VIII and laboratory work.

William H. Hays, A.B. Candidate for A.M.; Physics Minor, Course IV.

E. O. Wooton, A.M.; Course II.

H. C. Sherman, A.M.; Course II.

Frank Schlesinger, B.S.; Course VIII.

G. G. Needham, M.D. Special student; General Laboratory Course.

C. W. Edwards; Courses VII, VIII, XXVIII, and XXIX.

## NEW APPARATUS.

A hydraulic model of the Wheatstone Bridge, designed and constructed by Professor Hallock.

Apparatus to determine the velocity of sound by the method of resonance, designed and constructed in the department.

Mechanism to show composite pendulum vibrations, designed by Professor Hallock.

Two (2) telephones with complete equipment.

An improved fluoroscope, designed by Mr. Trowbridge and constructed by J. Grunow.

Three flicker photometers, designed by Professor Rood and constructed by Mr. J. Grunow.

Collection of Steeg's mineral sections for polariscope.

Turning lathes for metal and for glass.

## CHANGES IN STAFF.

At the commencement of the College Year the resignation of Asa S. Iglehart, Assistant, was received. Mr. Iglehart, who was for five years lecture assistant in the department, has devoted himself to the study of medicine, and on receiving the degree of M.D. this spring, was appointed to the House Staff of St. Luke's Hospital. To fill this vacant assistantship, Dana C. Wells, a graduate of the College, of the class of 1893, was appointed.

*Papers Presented to Learned Societies and Public Lectures by  
Members of the Department of Physics.*

Prof. O. N. Rood :

Fall meeting of the National Academy of Sciences, Columbia University, New York, Nov. 16, 1896, "Six Forms of Flicker Photometer."

Professor William Hallock :

Public Lecture, New York Academy of Sciences, Nov. 30, 1896.

"Science and Voice Production."

Railroad Men's Y. M. C. A., New York, Dec. 14, 1896,

"X Rays," Illustrated by Experiments.

Delaware County Institute of Arts and Sciences, Media,  
Pa., Jan. 14, 1897,

"Photography of Sound."

Henry Electrical Club, New York City, Jan. 22,

"The Absolute Measurement of Current."

Columbia University Musical Course, Carnegie Music Hall,  
March 15, 1897,

"The Analysis of Timbre."

"Hudson Guild," New York City, March 17, 1897,

"Sound."

"Quid Nunc Club," of Harlem, New York City, March 19,  
1897,

"Voice Photography."

Brooklyn Institute, March 23, 1897,

"Acoustics of Articulation."

Mr. Reginald Gordon:

Y. M. C. A. of Newburgh, N. Y., Jan. 20, 1897,

"Meteorology and Climate."

Mr. H. C. Parker:

Section of Astronomy and Physics, New York Academy  
of Sciences, Dec. 7, 1896,

"A Universal Method of Measuring Current."

Mr. C. C. Trowbridge:

Section of Astronomy and Physics, New York Academy  
of Sciences, Nov. 2, 1896,

"A New Research-Fluoroscope."

Mr. H. S. Curtis:

Section of Astronomy and Physics, New York Academy  
of Sciences, Feb. 1, 1897,

"The Advantages of Long-focus Lenses in Landscape  
Photography."

#### PUBLICATIONS.

Prof. O. N. Rood—"On the Regular or Specular Reflection  
of the Röntgen Rays from Polished Metallic  
Surfaces," *American Journal of Science*, Sep-  
tember, vol. ii., pp. 173-180.

Prof. William Hallock—"Rational Scientific Voice Production," *Werner's Magazine*, January; "Fulton's Memoirs of Frederick A. P. Barnard, Tenth President of Columbia College" (Review), *Science*, August 28, vol. iv, pp. 273-275; "Curtis's Voice Building and Tone Placing," *Ibid*, June 19, vol. iii, pp. 901-902; "Voice Production and Analysis" (with Dr. F. S. Muckey), *The Looker On*, July, September, and November, vol. iii, Nos. 1, 3, and 5; "Subterranean Temperatures at Wheeling, W. Va., and Pittsburg, Pa." *School of Mines Quarterly*, vol. xviii, January, 1897.

Mr. H. C. Parker—"A Systematic Treatise on Electrical Measurements," New York, Spon & Chamberlain, May 1, 1897.

Mr. C. C. Trowbridge—"The Use of the Hair Hygrometer," *Science*, July 17, 1896, vol. iv, No. 81, p. 62; "The Use of the Hair Hygrometer," *Transactions, N. Y. Academy of Sciences*, December 15, 1896 (revised from article in *Science*); "The Occurrence of Tryngites Subruficollis in the New England States," *The Auk*, April, 1897, vol. xiv, No. 2, p. 209.

Mr. H. S. Curtis—"The Use of the Spectacle Lens in Photographic Work," published in *The Photographic Times*, July, 1897.

Dr. H. E. Keyes—"Ueber die Darstellung von Aethern und Säureestern vermittelt aromatischer Sulfosäuren," Heidelberg, November, 1896.

#### INVESTIGATIONS IN PROGRESS.

Prof. Rood is studying the details of the new "flicker photometry."

Prof. Hallock—Continuation of investigation in voice analysis. Investigation of the temperature of the interior of the earth. An extensive series of observations were made at the deep well at

Pittsburg, Pa., and the results have been compared with similar observations made by him previously in the deep well at Wheeling, W. Va.

Mr. H. C. Parker—The constancy of carbon resistances. Comparison of various methods of electrical measurement. Mr. Parker has by request prepared for the Bowdoin College Library a list of standard books on electricity.

Mr. C. C. Trowbridge—A new method of coloring lantern slides (completed).

Mr. H. S. Curtis—Long focus lenses in photography (completed).

Mr. T. G. White—The physical properties of faults and folds in sedimentary strata.

#### INVESTIGATIONS BY GRADUATE STUDENTS.

F. L. Tufts, A.M., Fellow in Physics, 1895-1897—The new flicker photometry. This subject has been investigated in an extensive series of careful experiments, and the results have been embodied in a Doctor's dissertation under the above title and have been published in the *Transactions of the New York Academy of Sciences*, xvi. pp. 190-212, Fig. 1-6, April, 1897.

H. E. Houston, A.B.—Relative actinic power of daylight on different days and different times of day.

Parker C. McIlhiney, Ph.D., of the Department of Metallurgy—On the conducting power of molten glass for electricity.

Mr. W. W. Cook, A.B., who has held the Tyndall Fellowship for two years, tendered his resignation in January, and will devote himself to the study of mathematics.

The number of students in attendance on the courses of the Department this year has been greater than ever previously, there being a total enrollment of 465, many of whom took several courses. Last year the number was 434, and in 1895, 415.

## DEPARTMENT OF PHYSIOLOGY.

Professor JOHN G. CURTIS.

In this department instruction has been given by Professors J. G. Curtis and F. S. Lee, and by Drs. R. H. Cunningham and R. Hunt.

During the summer of 1896 the students' laboratory was considerably enlarged; a large demonstration-room was assigned to the exclusive use of the physiological teachers; and two small laboratories were added to the space available for research, one of these having been fitted up for the special study of physiological problems by histological methods. All of these additions have been thoroughly equipped, and already have proved their value to the progress of physiology.

The following is a summary of the courses given during the year:

Course.		No. of students with candidacy for degree.	
I. General Physiology.....	15	{ Ph. D.	2
		{ A.M.	7
		{ A.B.	1
		{ Hearers	5
II. Physiology of Man and Higher Vertebrates.....	418	{ M.D.	412
		{ Ph.D.	5
		{ A.M.	4
III. Laboratory Work of Course I.....	12	{ Ph.D.	2
		{ A.M.	7
		{ A.B.	1
		{ Special	2
IV. Laboratory Work of Course II.....	9	{ Ph.D.	5
		{ A.M.	3
		{ Special	1
V. Research.....	7	{ A.M.	3
		{ Special	4
Total .....			461
Names repeated.....			20
Corrected total.....			441

Since the last report, Dr. R. H. Cunningham, Alumni Association Fellow in Physiology, has been engaged in the investigation of acromegaly, the restoration of coördinated

voluntary movement after "nerve-crossing," the cortical centres of the brain of the opossum, and the effects produced by the division of some of the association-tracts of the brain. Dr. Cunningham has been reappointed Fellow for the year 1897-98.

The researches carried on in the department in 1896-97 by the members of the staff and students under their direction, comprise the following:

The phototaxis of *Stentor*.

Protoplasmic movement in *Nitella*.

The artificial production of monstrosities in the pupæ of moths.

The determination of sex.

The form of the muscle-curve in the turtle.

The form of the muscle-curve in the frog.

The restoration of coördinated voluntary movement after "nerve-crossing."

Acromegaly in a dog.

The effects produced by division of some of the association-tracts of the brain.

The cortical centres in the brain of the opossum.

Changes in brain cells during poisoning by hyoscine and absinthe.

Experiments on the accelerator nerves of the heart.

Reflex changes in the heart-rate.

The innervation of the heart of the opossum.

The innervation of the heart of the guinea-pig.

Some general physiological properties of the cardiac muscle of the lobster.

Effect of heat and cold upon the lobster's heart.

The bactericidal effects of lymph from the thoracic duct.

The effects upon respiration of electrical stimulation of the central end of the vagus.

Further researches on the mechanics of deglutition.

The contractility of the stomach.

The vagus as a motor nerve of the stomach.

The power of absorption of alien serum by the peritoneum.

The physiological effects of intestinal irrigation.

*Publications During 1896-97.*

- J. G. Curtis, M.D.—The Mechanics of the Circulation. In *An American Text-Book of Physiology*. Philadelphia, W. B. Saunders.
- F. S. Lee, Ph.D.—Physiology. The Vital Processes in Health. In *In Sickness and in Health*. New York, D. Appleton & Co.  
 Reproduction. In *An American Text-Book of Physiology*. Philadelphia, W. B. Saunders.  
 Review of *A Manual of Physiology*, by G. N. Stewart. *New York Medical Journal*, vol. lxiii.  
 Review of *The Physiology and Pathology of the Cerebral Circulation*, by L. Hill. *New York Medical Journal*, vol. lxiv.  
 Review of *Physiology for Beginners*, by M. Foster and L. E. Shore. *New York Medical Journal*, vol. lxv.
- R. Hunt, M.D., Ph.D.—Experiments on the Relation of the Inhibitory to the Accelerator Nerves of the Heart. *Journal of Experimental Medicine*, vol. ii.
- S. J. Meltzer, M.D.—On Absorption of Strychnine and Hydrocyanic Acid from the Mucous Membrane of the Stomach. *Journal of Experimental Medicine*, vol. i.  
 The same, in the *Transactions of the Association of American Physicians*, vol. xi.  
 Ueber die Unfähigkeit des Schleimhaut des Kaninchenmagen, Strychnin zu resorbiren. *Centralblatt für Physiologie*, August 8, 1896.  
 The Experiments on the Faradization of the Stomach of Animals. *New York Medical Journal*, April 24, 1897.  
 Ueber Reizversuche mit Inductionsströmen am Thiermagen. *Archiv für Verdauungskrankheiten*, May, 1897.

P. A. Levene, M.D.—The Influence of Phloridzin on the Blood and Lymph. *Journal of Experimental Medicine*, vol. ii.

The following papers are in press :

R. H. Cunningham, M.D.—Restoration of Co-ordinated Volitional Movement after "Nerve-Crossing." Acromegaly in a Dog.

The Cortical Centres of the Opossum (*Didelphys virginiana*).

R. Hunt, M.D., Ph.D., and D. W. Harrington, M.D.—The Physiology of the Cardiac Nerves of the Opossum (*Didelphys virginiana*).

Notes on the Physiology of the Cardiac Nerves of the Calf.

R. Hunt, M.D., Ph.D., A. Bookman, A.B., and M. J. Tierney, A.B.—Einige allgemeine Eigenschaften des Herzmuskels vom amerikanischen Hummer.

D. W. Harrington, M.D.—On the Physiology of the Cardiac Nerves of the Guinea-Pig.

Professor Lee has been actively engaged upon a translation of M. Verworn's *Allgemeine Physiologie*, which will be published early in the next academic year.

#### DEPARTMENT OF ZOÖLOGY.

Professor HENRY FAIRFIELD OSBORN.

The movement in this branch of science during the past year is chiefly indicated by the increase of the zoölogy-major candidates for Ph.D., from 7 in 1896 to 11 in 1897, by the publication of one volume and upwards of thirty-five special papers and researches by officers and students of the department, and by the establishment of what we hope will prove to be a continuous system of exploration of the marine fauna of the Pacific coast. The various lecture and laboratory courses have been made fuller and stronger, and several new lines of investigation have been opened, thus giving our work a broader and more comprehensive character than heretofore, and bringing before every graduate student the ideas

and methods which are peculiar to different branches of biological research. Much remains to be done, however, towards a symmetrical and well balanced five-years' course, and several important additions and changes have been made in the curriculum for 1897-8, which with the fine facilities of Schermerhorn Hall will, we trust, raise our work to a higher plane.

The staff during 1896-7 consisted of Professor Osborn, Vertebrate Zoölogy; Professor Wilson, Invertebrate Zoölogy; Adjunct Professor Dean, Vertebrate Zoölogy; Mr. Calkins, Tutor in Invertebrate Zoölogy; Dr. Strong, Tutor in Comparative Neurology; Mr. Harrington, Laboratory Assistant. The changes for the coming year are the appointment of Mr. Harrington to the University Fellowship and of Mr. McGregor to the Assistantship.

## COURSES AND ATTENDANCE.

Instructors	Courses	Hours per Week	Students	Total
	(Collegiate)			
Profs. Wilson and Osborn	II. Elementary Biology	4	9 B.A. 3 Specials	12
Profs. Osborn and Wilson	III. General Zoölogy	4	3 B.A. 1 Ph.D. 1 Special	5
	(University)			
Dr. Strong	IV. Comparative Neurology	4-6	3 Ph.D. 2 M.D. 1 B.A.	6
Profs. Wilson and Osborn	V. Comparative Zoölogy	6	10 Ph.D.	10
Prof. Wilson	VI. Comparative Embryology	4	4 Ph.D.	4
Prof. Wilson	VII. Cellular Biology	1	5 Ph.D.	5
Prof. Osborn	VIII. Morphology of the Mammals	1-6	3 Ph.D. 1 Special	4
Prof. Dean	IX. Morphology of the Fishes	1	5 Ph.D.	5

There were 3 candidates for the degree of Master of Arts. For the degree of Doctor of Philosophy, as against 7 candidates in 1895-6 there were 15 candidates in 1896-7, 11 of whom pursued Zoölogy as a major subject, while 4 pursued it as a minor subject. These 18 graduates represented, in their A.B. degree, thirteen American colleges and universities as follows: Columbia University, 3; College of the City of New York, 2; Princeton University, 2; University of Vermont, 2; also 1 student from each of the following institutions: Yale University, Lafayette College, Ohio State University, University of Cincinnati, Kansas State University, University of Nebraska, University of Minnesota, University of California, Massachusetts Institute of Technology. This shows that the student representation is becoming national but has not as yet extended to the South. The graduates this year outnumbered the undergraduates. There were 14 students from Columbia College, including 9 Juniors, 3 Seniors, and 4 special students, beside the large class in the Schools of Applied Science instructed by Dr. Dean. The small number from the College is attributed to the inconvenience of our present laboratory, which will be remedied next year, and secondly to the questionable policy of admitting Seniors to the Medical School before they are fully grounded in biology.

Besides the regular lecture and laboratory courses, the Journal and Report Club was continued throughout the year, and as an important part of their training all members of the department took an active share in the proceedings of the biological section of the N. Y. Academy of Sciences.

*Marine Zoölogy.* By far the most important event of the year was the expedition to Puget Sound and other waters of the Pacific coast. With the feeling that the original opportunities at the marine station of Wood's Holl were too limited, an independent exploration for purposes of training and research was projected by Professor Osborn. The choice of locality, which proved to be a most fortunate one, was due to a survey of the Pacific coast made two years ago by Professor Wilson. The necessary funds, amounting to \$1200,

were subscribed by Trustees, friends of the University, and members of the zoölogical staff. The practical organization of the expedition devolved upon Professor Dean, who established the station at Port Townsend, near the entrance of Puget Sound, Washington, but soon afterward moved to the California coast, enjoying the hospitality of the Leland Stanford laboratory. Mr. Calkins then took entire charge, aided by Messrs. Harrington, Griffin, and Lloyd. Although pursued with very limited facilities, the work of the party was remarkably successful. Several discoveries were made, invaluable research material was secured, especially the developmental stages of *Chimæra*, *Bdellostoma*, and *Entoconcha*. A systematic faunal list of the North Pacific shores was begun. Besides enriching the type collection, original and duplicate material was distributed to the following institutions: the Oxford and British Museums, the Universities of California, Michigan, and Edinburgh, and Williams College. At the close of the summer, Professor Osborn and Mr. Calkins voyaged to Alaska, and were so much impressed with the richness of the coast and pelagic fauna that it has been decided to extend the exploration of the summer of 1897 into the practically unknown waters of the Sitka region. The results of these explorations are appearing in a special series of faunal papers and memoirs presented before the New York Academy of Sciences and the American Society of Naturalists.

The University will continue its hearty support of the Marine Biological Laboratory at Wood's Holl, which offers certain advantages for instruction, research, and intellectual contact, not to be found elsewhere. During the past summer six members of the University attended the laboratory. Dr. Strong and Mr. Crampton continued upon the staff of instructors. Prof. Wilson delivered one of the published lectures. Mr. R. Weil, Columbia '96, followed by Professor C. Judson Herrick, of Dennison University, occupied the Columbia table. It is especially gratifying to report also that through the continued generosity of the Hon. Wm. E. Dodge, of New York, the University has subscribed for a

half-year table at the Naples Zoölogical Station, Italy. The Columbia table at Naples has been occupied by Mr. Mathews (Columbia), and Mr. Graham (Princeton), and Mr. Hovey (American Museum of Natural History) has now been assigned to it. It is very desirable that some friend of the University should make this a full-year table.

*General Researches.* The published researches of the year, by Messrs. Osborn, Wilson, Dean, Calkins, Strong, Harrington, Crampton, and McGregor, were enumerated in the March number of the *University Bulletin* to the number of thirty-four. They cover various branches of paleontology, embryology (direct and experimental), vertebrate and invertebrate zoölogy, neurology, and general biology. The published and unpublished work may be summarized as follows: Professor Osborn has continued his theoretical studies upon the factors of evolution, especially in the new matter of "organic selection." His principal field and museum researches have been in preparation for his general work upon the *Fossil Mammals of North America*, concluding the college year by a geological reconnaissance of the Huerfano Basin of Lower Colorado, the Jurassic of Wyoming, and the Pleistocene of Northwestern Nebraska. As curator he has organized three parties for the continuation of the American Museum collections, which will hereafter include the extinct reptilia as well as the mammalia. As chairman of the Executive Committee of the New York Zoölogical Society, he devoted much time to the organization of the society, the establishment of relations with the city officials, and the fundamental plans for the Zoölogical Park.

Professor Wilson's year was mainly devoted to the completion of Volume IV of the *Columbia University Biological Series*, entitled "The Cell in Development and Inheritance." This work is of a more exhaustive and monographic character than the preceding volumes of this series. It appeared in October, has been very favorably received, and a second edition is now required. Professor Wilson was thus debarred from taking part in the Pacific-coast work of 1896. After a brief collective tour at Beaufort, North Carolina, he has

joined the party for the summer of 1897. During the winter he has continued his previous researches upon the fertilization and cell-division of echinoderms and annelids.

Professor Dean, besides his investigations upon the Pacific coast, where he was so fortunate as to secure materials for the embryology of *Chimæra* and *Bdellostoma*, has continued his series of contributions to the embryology of the American ganoids in his studies of *Amia*, published mainly in English and German periodicals. He has also published numerous observations upon the palæozoic fishes.

Other investigations of the year include the completion of Mr. Calkins's studies of the cell division of *Noctiluca* and other protozoa in comparison with metazoa; also his discovery of the tetrad formation in the cells of *Pteris*, published in the *Torrey Botanical Club Bulletin*. The University Fellow, Mr. H. E. Crampton, has presented several papers upon the growth, fertilization and division of the eggs in Ascidians, and he has initiated an important series of experiments upon the grafting of insects and the artificial formation of twins. The other Fellow, Mr. J. H. McGregor, is concluding a research upon the formation of spermatozoa in Amphibia and has also made several communications before the Academy and Society of Naturalists. Other researches, more or less fully published, are the histology, physiology, and development of lime glands of Annelids, by Mr. N. R. Harrington; the general mitotic phenomena in the eggs of Gephyreans by Mr. B. B. Griffin; spermatogenesis in insects by Mr. F. C. Paulmier; the early embryology of the catfish by M. F. B. Sumner; the development of the cormorant by Mr. A. E. Anderson. Mr. Albert P. Mathews, former University Fellow, continued his researches in Marburg, Germany, upon the physiology of secretion and has presented his thesis for the Ph.D. degree upon the subject. He has published articles in *Science* and the *American Naturalist*.

*Publications.*—By invitation of the Trustees of the University Press, the *Columbia University Biological Series* will hereafter appear with the imprint of the press. A second

edition of Vol. I., *From the Greeks to Darwin*, was published in October, 1896, and as above noted a revised edition of Vol. IV., *The Cell*, will appear in October, 1897. Mr. Arthur Willey, now Cambridge University Student, is revising and extending Vol. II., *Amphioxus*, for a second edition.

The publication of the collected laboratory memoirs, or *Biological Contributions*, has been delayed from want of funds. As above noted, an independent series of numbered papers is forming from the Pacific-coast exploration. Of these, three numbers have appeared.

The *Journal of Comparative Neurology* became associated with Columbia last year, by a subscription towards its support by Professor Osborn, and by the election of Dr. Strong as associate editor. During the past winter the *Journal* was edited from the laboratory by Prof. C. Judson Herrick, university student, and Dr. Strong. It is steadily gaining in prestige and circulation.

*Recommendations.*—The above Report marks the close of five years' development of this department. The increase in the staff, in students, the extension of the lectures, of the laboratory instruction, of the teaching museum, of the library, of marine exploration, and of serial and other publications has been effected by economical administration of funds but slightly in excess of those with which the department was originally endowed six years ago. This excess of \$2500 covers both salaries and running expenditures. Liberal subscriptions to supplement these inadequate funds have been made by several members of the zoölogical staff, from year to year, aided to some extent by generous individual subscriptions from the President and Trustees of the University.

No more effective gift could be made to Columbia than a fund to sustain marine explorations and to properly publish the researches issuing therefrom.

## DEPARTMENT OF BACTERIOLOGY.

Professor T. MITCHELL PRUDDEN.

Two courses of instruction in Bacteriology and Bacteriological Technique—University Course' II—have been given by Dr. T. M. Cheesman, Instructor in Bacteriology, during the year ; two of the five attendants upon these having been candidates for a higher university degree. These courses have been extended and elaborated and are supplemented by a practical course in Photography conducted by Dr. Leaming.

Dr. Cheesman and the Assistants in Bacteriology, Drs. Dyar and Hiss, have been engaged in original studies not yet ready for publication.

Dr. Charles Norris, the Alumni Association Fellow in Pathology, has devoted his entire time to the investigation of a series of cases of obscure infectious disease occurring in various hospitals.

Special original researches in Bacteriology have been made in the laboratories by Drs. Meltzer, Jeliffe, Freeman, and Levine.

A list of the publications of workers in this department is included in the report of the Dean of the Medical Faculty.

## LIBRARY

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### REPORT OF THE LIBRARIAN

FOR THE ACADEMIC YEAR ENDING JUNE 30, 1897.

*To the President of Columbia University  
in the City of New York :*

SIR:

I have the honor to make the following report for the library for the year ending June 30, 1897.

#### GROWTH OF THE LIBRARY.

The number of volumes added during the year was 11,928 of which 7,015 were received from purchase or exchange, 2,576 from gift and 2,337 from the binding of pamphlets and other material already in the library or received during the year in pamphlet form. These accessions raise the number of bound volumes in the library, exclusive of duplicates, to about 235,000. The number of volumes given to the library, some of which are duplicates not incorporated in the library, was 3,403. The number of pamphlets given was 5,009. These gifts came to the library from 745 persons or institutions. It should also be noted that the actual number of persons and institutions making gifts of books or pamphlets to the University is somewhat larger than that here stated, as gifts are sometimes addressed to the University, or to some special department, and only reach the library indirectly, so that trace of their origin is thus lost.

The annual additions to the library for the preceding five years were as follows:

1891-1892.....	15,408
1892-1893.....	19,797
1893-1894.....	15,161
1894-1895.....	24,839
1895-1896.....	20,584

This gives an average annual increase for this period of 19,157 volumes. It will thus be seen that the additions for the past year have fallen much below the average growth of the library. This is due to the fact that no important gifts of money for the purchase of books have been made to the University during the past year. The annual appropriation from the general treasury for books and binding is but little in excess of the amount necessary for the regular needs of the library, for the payment of subscriptions to periodicals and serial publications, and other works coming out in parts, and for current binding. The income of the Barnard, Avery, and Cotheal Funds, together with the small gifts of money received, and certain unexpended remnants of funds previously given to the library, have been the only resources available for the purchase of books during the year. In the Department of Science, covered by the Barnard Fund, the library has been able to purchase substantially all books recommended by the officers of instruction and to add a number of important series during the year. In the other fields, particularly in economics, history, literature, and philology, only the most pressingly needed books have, as a rule, been purchased.

This break in the development of the library would have been much more to be regretted under ordinary circumstances, but the proposed removal of the library to the new building changes materially the aspect of affairs. The much smaller number of books received, and the reduced work thus placed upon the catalogue department, has made possible the cataloguing of many hundred volumes of bound pamphlets and similar material, and the bringing up to date, as far as possible, some of the arrearages of work always found even in the best managed and most fully equipped libraries. The

additions for the year were along the usual lines. By reason of the establishment of a Department of Music a sum was made available for the beginning of a musical library to meet the needs of the Department. The university library contained little of value in the field of music except some works in the history of music and in musical biography. The titles of some of the more important sets of books added during the year are here given. Besides these, many series of books in Australian, Indian, and Canadian law have been purchased during the year :

- Académie des Inscriptions et Belles-lettres, Mémoires, vols. 14 to 35 part 1 and Atlas (completing the set).  
 Annales de Mathématiques. 21 vols.  
 Annali delle Università Toscane. 20 vols.  
 Archæologia Cambrensis. 50 vols. (completing the set).  
 Archiv der Politischen Ökonomie und Polizeiwissenschaft. 15 vols.  
 Archiv für Kirchliche Baukunst. 12 vols.  
 Archiv für Slavische Philologie. 15 vols.  
 Archivio Glottologico Italiano. 9 vols.  
 Archivio per l' Anthropologia e la Etnologia. 19 vols.  
 Bartsch, A. Le Peintre Graveur. 23 vols.  
 Berlin Akademie der Wissenschaft, Abhandlungen, 1816 to 1875. (completing the set).  
 Boccaccio, Opere. 17 vols.  
 Calcutta Review, vols. 59 to 100 (completing the set).  
 Collezione di Opere Inedite. 71 vols.  
 Concilia Germaniæ. 10 vols.  
 Correspondance Mathématique et Physique. 6 vols.  
 Deutsche Vierteljahrschrift. 58 vols.  
 De Vrije Fries, vols. 1 to 16.  
 Engineering News, vols. 1 to 10 (completing the set).  
 Institut für Oesterreichische Geschichtsforschung, Mittheilungen. 15 vols. (completing the set).  
 Istituto Storico Italiano, Fonti per la Storia d'Italia, 21 vols. Bulletin, 13 vols.  
 Jahrbücher der Gefängnisskunde. 11 vols.  
 Jahrbücher der Literatur. 128 vols.

- Journal of the Institute of Bankers. 17 vols.  
 Law Review. 23 vols.  
 Law Times Reports, vols. 25 to 70 (completing the set).  
 L'Emulation. 15 vols.  
 Les Actes des Apotres. 10 vols.  
 Mansi, J. B. Sacrorum Conciliorum Nova et Amplissima Collectio. 31 vols.  
 Mathematische Annalen. 16 vols (completing the set).  
 Mnemosyne, vols. 1-11 (completing the set).  
 Neuphilologisches Centralblatt. 9 vols.  
 Palestrina. Opera omnia. 32 vols.  
 Philosophisches Journal, vols. 1-10.  
 Phonetische Studien. 6 vols.  
 Psychische Studien. 22 vols.  
 Recueil des Historiens des Croisades. 12 vols.  
 Revue Celtique. 12 vols.  
 Revue des Travaux Scientifiques. 14 vols.  
 Revue Mycologique. 9 vols.  
 Royal Institution of Cornwall, Journal. 11 vols.  
 Schmidt, C. C. Jahrbücher der Medicin. 243 vols.  
 Schweizerische Naturforschende Gesellschaft, Verhandlungen, vols 3 to 72 (completing the set).  
 Schweizerische Zeitschrift für Gemeinnützigkeit, vols. 21 to 32 (completing the set).  
 Selden Society, Publications. 9 vols.  
 Société Archéologique de Bordeaux, Bulletin. 19 vols.  
 Société d'Archéologie Lorraine, Journal. 43 vols.  
 Société des Antiquaires de l'Ouest, Mémoires, 58 vols. Bulletin, 20 vols.  
 Société Française de Numismatique, Annuaire, 15 vols. Comptes Rendus, 6 vols.  
 Société Mycologique, Bulletin. 11 vols.  
 Société pour la Conservation de Monuments Historiques d'Alsace, Bulletin. 17 vols.  
 Société Savoisienne d'Histoire et d'Archéologie, Mémoires. 35 vols.  
 Sureties Society, Publications. 92 vols.  
 Vienna Akademie der Wissenschaften, Philosophisch-Historische Classe, Sitzungsberichte, vols. 103 to 131 (completing the set).

Wyclif Society, Publications. 18 vols.  
 Yorkshire Archæological and Topographical Journal. 14 vols.  
 Zeitschrift für Deutsche Kulturgeschichte. 7 vols.  
 Zeitschrift für Deutsche Sprache. 9 vols.  
 Zeitschrift für Philosophie. 33 vols.  
 Zoolog-Zootomisches Institut in Würzburg, Arbeiten. 10 vols.

## USE OF THE LIBRARY.

The gradual but substantial increase in the use of the library, which has been noteworthy for several years, continued during the past university year. On account of the preparations necessary for the removal of the library to the new building, by order of the President, the library was closed to readers and for the loaning of books after June 12th, so that the number of days in which the library was open was reduced from 307 last year to 291. The number of books loaned during these 291 days was 67,975 volumes over against 59,756, the recorded loans of last year, showing a gain of 8,219. Renewals were made on 30,703 loans.

The record of loans for the past seven years, from July 1, 1890, to June 12, 1897, is as follows:

1890-1891.....	22,721
1891-1892.....	26,632
1892-1893.....	28,184
1893-1894.....	42,015
1894-1895.....	53,471
1895-1896.....	59,756
1896-1897.....	67,975

The number of volumes loaned from the library for the college year 1886-1887, ten years ago, was 13,373, or less than one-fifth of the number loaned during the past year.

## CATALOGUE DEPARTMENT.

The work of the catalogue department has been carried forward with customary success. The resignation and departure of three members of the catalogue staff, one of

whom resigned to become the librarian of the Teachers' College and another to study in Europe, created vacancies which were only filled by the addition of beginners, so that the catalogue force has been somewhat reduced during the year. The number of new cards made and placed in the catalogue during the year was 44,861, against 48,022 written during the previous year. By some inadvertence, the record of old cards in which additions or corrections were made during the first six months of the year was lost, but during the period from January 1, 1897, to June 30, 27,267 old cards were thus corrected or brought up to date, against 22,051 for the year before. The work of cataloguing and making changes in classification, which has been indicated in the previous reports, has been successfully carried forward during the year, and, with the smaller number of books added to the library, it has been possible to do much cataloguing of pamphlets and similar material. The library contains a large body of bound volumes of pamphlets, some of which had been on the shelves without being catalogued for many years, others of which had been received by gift or purchase and had necessarily remained uncatalogued, while a much larger number has been formed by the careful arrangement and binding of pamphlets on special subjects. Much the larger part of the cards added during the year are from these sources, or from analytical work which has been carried on as opportunity presented itself.

The catalogue of the university library as it exists to-day, notwithstanding the fact that some of the old and imperfect work still remains to be corrected, is undoubtedly, both in form and in accuracy and clearness of statement, unsurpassed by that of any large library in the world. This high standard of excellence is to be maintained and, if possible, improved. The importance and practical value of first-class catalogue work in a large library has been often emphasized in the reports from this library, and its truth is ever more apparent in the daily experience of the users of our catalogue.

## THE LIBRARY COUNCIL.

The Library Council has been changed during the year by the resignation of Prof. E. D. Perry and the appointment by the President of Prof. A. V. W. Jackson in his stead. The number of meetings held during the year has been limited.

## REMOVAL OF THE LIBRARY.

Work on the new Library building on Morningside Heights has been carried on with all possible vigor during the year. The library was closed by direction of the President after June 12th and the librarian was directed to make a careful inventory of the entire library with a view to ascertaining the exact condition of the books. This has been carried on and was largely completed at the close of the university year. At the same time, without the disturbing presence of readers, the books of the library were placed in perfect order and all pamphlet and similiar material, including incomplete series of reports and like publications, is being carefully handled over and bound up as far as is practicable and placed in the best possible form for transportation. The system of movable location in which the books of this library are arranged on the shelves, makes unnecessary for the process of removal any changes in the cataloguing or other entries, except such as are called out by the modifications in the arrangement of books which are deemed practicable and wise on taking possession of the new quarters.

Among these changes may be noted the creation, as far as was deemed desirable by the officers of the several departments, of departmental libraries. A letter was sent to each department in the schools of pure and applied science asking their opinion concerning the desirability, for their several departments, of departmental libraries, and in case such libraries were desired, calling for lists of books for that purpose. A wide divergence of opinion as to the policy to be pursued was apparent from the replies to these communications, but for such departments as deemed a departmental

library necessary, they are being prepared and as far as possible books from the general library set apart for departmental uses. Departments thus desiring departmental libraries of some size are the Departments of Zoölogy, Mineralogy, Geology and Palæontology, and Mining. It is understood that the Botanical library will be transferred to the Botanical Gardens at Bronx Park when the buildings there are in readiness.

#### REFERENCE LIBRARY.

As stated in last year's report preparation has been made for a Reference library in the new building to number about 10,000 volumes. A letter was sent to the heads of the several departments asking for suggestions of books to be placed in this Reference library. From the replies received, as far as practicable, books have been taken from the general library and arranged, and the necessary changes in library records made to form the Reference library. The work of re-arranging reference and departmental libraries is, however, still incomplete.

#### GIFTS.

The record of gifts for the year falls short of the report of previous years. Dr. Henry Drisler has continued his gifts and a considerable body of books from his library has been sent to the library too late to be received during the university year now completed, which will be acknowledged in next year's report. The most important gift in books during the year was made by Mr. Chas. H. Senff, who has been in the past a frequent benefactor of the University and the library. His gift consisted of a collection of 380 volumes, chiefly illustrated works in natural history, art and archæology, many of the books being of great value and importance. A conservative estimate of the value of this gift would be not less than \$6,000.

Dr. J. Ackerman Coles of the class of 1864 presented to the University, to be placed in the library, copies in bronze of the bust of Zeus found at Olympia and ascribed to

Phidias, a bust of Plato from Herculaneum, and of the Hermes of Praxiteles, found in the temple of Hera, Olympia. These beautiful busts, on pedestals of green marble, were placed at the east end of the present reading room.

The usual current of miscellaneous gifts from various persons and institutions finds its way into the library without interruption and is a large and valuable element in our growth. The following sums of money for the purchase of books were given during the year:

Samuel P. Avery, for the purchase of books for the Avery Library.....	\$2,840.25
President Low, for the purchase of books on music.....	500.00
John D. Crimmins, works in ecclesiasti- cal law and history.....	1,000.00
Samuel D. Babcock, books on history..	500.00
Hon. G. K. Sheridan, works in Sanscrit	50.00

#### AVERY LIBRARY.

The Avery Library during the past year has maintained, chiefly through the beneficence of its founder, a steady though not rapid growth. Its unrivalled resources are bringing it increased recognition and are in constant use. Mr. E. R. Smith, who has special charge of the collection, has been in attendance during the afternoons and several evenings of each week, and the opportunities for the use of the collection have been as ample as could be afforded in our present limited quarters.

#### EXPENDITURES.

The direct expenditures of the library from the appropriations made by the Trustees have been as follows:

Salaries.....	\$24,000.00
Supplies and Incidentals.....	1,437.21
Books and Binding.....	13,389.25

The Book Account was as follows:

Appropriation.....	\$12,000.00	Expended for books	
Balance from last year	630.43	and binding.....	\$13,389.25
Sales and lost books.	137.59	Balance carried over	
Fines.....	234.70	to next year's account	663.47
Transfer by order of			
Pres. Low for books			<u>\$14,052.72</u>
on music.....	500.00		
Gift of S. D. Babcock.	500.00		
Gift of G. K. Sheridan	50.00		
	<u>\$14,052.72</u>		

There was expended during the year from the

Special Fund 1894.....	\$1,783.94
Special Fund 1895.....	1,281.68
Special Fund 1896.....	6,305.87
Senff Fund Biology.....	354.53
Sociology Fund.....	4.80
Adams Fund.....	264.25
Barnard Fund.....	2,904.06
Avery Fund.....	1,048.01
Cotheal Fund.....	87.86

The expenditures for the binding and the repair of books in the general library were \$4,757.33, which does not include the cost of books bound for the Avery Library, or new books bound abroad. Beside this, the amount of \$1,192.43, was paid for bills for binding carried over from the previous year. The number of books newly bound was 5,587, including 189 volumes bound at a cost of \$206.15 for the New York Academy of Sciences. 1,732 volumes were rebound or repaired at a cost of \$870.05. Class and book numbers were gilded on 22,526 volumes at a cost of \$650.11.

Appendices show the current use of the library and give the names of those persons and institutions who, during the year, gave to the library books or pamphlets.

Respectfully,

GEO. H. BAKER,

*Librarian.*

## APPENDIX A

## STATISTICS OF THE USE OF THE LIBRARY 1896-97

1896-97	Days Open	Loans	Renewals	Total Loans	Daily Average	Largest Loaned	Smallest Loaned	Fines.	Readers' Tickets Issued.
July	26	2598	874	3472	133.5	211	46	\$ 7.95	5
August	26	2649	938	3587	138.0	186	46	11.55	5
September	26	2330	745	3075	118.2	149	41	17.45	9
October	27	6402	3866	10,268	380.3	300	92	14.70	21
November	24	6941	1686	8627	359.4	521	178	21.40	22
December	25	7120	5120	12,240	489.6	402	158	14.25	20
January	26	8176	3506	11,682	449.3	457	21	34.60	23
February	24	7920	2737	10,657	444.0	422	288	20.10	22
March	27	8998	2232	11,230	415.9	499	249	30.25	14
April	24	5797	5096	10,893	453.8	323	165	22.50	8
May	26	5137	1470	6607	254.1	305	119	19.00	5
June	10	3907	2433	6340	634.0	1138	66	20.95	0
Totals	291	67,975	30,703	98,678	339.1	—	—	\$234.70	154

## APPENDIX B

## COLUMBIA UNIVERSITY LIBRARY

## RECORD OF GIFTS, 1896-97

	Vols.	Pam.		Vols.	Pam.
Acha, G. . . . .	1		Andover Theol. Sem. .		1
Adams Academy . .		1	Ancient and Honorable		
Aguilar Free Lib'y .		1	Artillery Co. . . . .	1	
Alabama Agric. and			Anthony's Photog. Bul-		
Mech. Coll. . . .		51	letin . . . . .	1	
" Agric. Exp.			Arkansas Indust. Univ.		1
Station . . . . .		1	Armour Inst. of Tech.		2
" Geolog. Sur.		3	Assoc. Spanish and		
" Indust. and			Cuban Press . . . .	2	1
Sci. Soc. . . . .		1	Atherton, Mary L. . .	1	
" University . .		5	Atlanta Univ. . . . .		6
Albany P. E. Diocese .			1 Auburn Theol. Sem. .		1
Albion College . . .		1	Auchilcloss, W. S. . .		2
Alfred University . .		11	Austen, P. T. . . . .	1	
Allegheny College . .		1	Australasian Assoc. for		
Am. Assoc. for Adv. of			Adv. of Science . . .		
Science . . . . .	3		Austria Geol. Reichsan-	1	
" Bar Assoc. . . .	1	1	stalt . . . . .	1	
" Blower Co. . . .	1		Avery, S. P. . . . .	129	
" Chamber of Com-			Baker, G. H. . . . .	1	
merce at Paris . . .		2	" M. . . . .		1
" Forestry Assoc. .		3	" W. G. . . . .	3	
" Geogr. Soc. . . .	1		Baldwin Univ. . . . .		5
" Historical Assoc. .	1		Ballarat School of Mines		8
" Institute of Archi-			Bancroft-Whitney Co. .	3	
tecs . . . . .		2	Barnard College . . .		7
" Inst. Elec. Eng. .	2		Barr, E. . . . .		1
" " Mining " . .	1		Barret, Norris S. . .	1	
" Magazine of Civics	3		Barrows, S. J. . . . .		1
" Mathematical Soc.	1		Bartlett, H. . . . .	1	
" Metrological Soc.	2		Bates College . . . .		1
" Missionary Assoc.	1		Bath (Eng.) Mayor . .		1
" Museum of Nat.			Becker, Geo. F. . . .		2
History . . . . .	1		Beckh-Widmanstetter .	1	
" Philosophical Soc.	2		Beebe, W. S. . . . .	1	1
" Real Estate Co. .		1	Belmont Literary and		
" Shipmasters' Asso-			Hist. Soc. . . . .		1
ciation . . . . .	1		Bennett College . . .		1
" Soc. Prevention of			Berghoeffer, C. . . .		1
" Cruelty to Ani-			Berkeley Divinity Sch.		1
mals . . . . .		1	Berkshire Indust. Farm		1
" Soc. Mechanical			Berlin Bibliothek d.		
Eng. . . . .	1		Reichstages . . . .	3	
" Type Founders Co.	1		" Kunstgewerbe . .		
Amherst College . .		2	Museum . . . . .		6
Amity College . . .		3			

	Vols.	Pam.		Vols.	Pam.
Berlin University . .		151	California Mining Bur.	1	3
Biglow & Main Co. . .	1		"    R. R. Com. . .	1	
Binion, Joshua . . .	273		"    Univ. . .		28
Bishops College . . .		1	Cambridge City Clerk .	1	
Bolmer, W. B. . . .	1		Canada Agric. Dept. . .		1
Bonn Univ. . . . .		3	"    Geo. Survey . .	1	1
Boston Assoc. Charities		1	"    Law Jour. Co. .		1
"    Health Bd. . .	1		Canada Royal Soc. . . .	1	
"    Museum of Fine			Carleton College . . .		1
Arts . . . .		1	Carnegie Library . . .		4
"    Poor Overseers		1	Carpenter, G. R. . . .	74	68
"    Public Library .		5	"    W. H. . . . .	2	5
"    Record Com. . .	1		Catholic Univ. of Am. .		7
"    School " . . .		1	Cattell, J. Mc. . . . .	68	322
"    Transit Com. . .	1		Centre College . . . .		12
"    University . . .		6	Century Assoc. . . . .	2	
Boughton, Geo. H. . .	2		Chase, F. H. . . . .	1	
Bowdoin College . . .		3	Chesterfield Inst. of		
Bowerman, G. F. . . .	1		Eng. . . . .	5	
Bradstreet . . . . .	1		Chicago Civ. Ser. Com.	1	
Brackett, H. . . . .		50	"    Home for Aged		
Breitkopf & Haertel . .	1		Jews . . . . .		2
Breslau Univ. . . . .		57	"    Jewish Train-		
Briggs, A. T. . . . .		2	ing School . .		2
Britton, N. L. . . . .	47	22	"    Normal Sch. . .		10
"    Mrs. E. G. . . .	3		"    Public Lib'y . .		1
Brooklyn City Works			"    Theol. Sem. . .		2
Com. . . . .	1		"    University . . .	1	11
Brooklyn Daily Eagle .	1		Chimenti, F. . . . .	2	
"    Eye and Ear			Christ Church Hist.		
Hospital . . .		1	Assoc. . . . .		1
"    Inst. of Arts			Church of Christ. Sci-		
and Sciences .	1	1	entist . . . . .	2	
"    Library . . . .		1	Church of St. Mary the		
"    Non-Sectarian			Virgin . . . . .		1
Hospital . . .		1	Cincinnati Pub. Lib'y .		2
"    Parks Com. . .	1		"    Univ. . . . .		1
"    Polytech. Inst.		1	Clark, John S. . . . .		1
Brouner, W. B. . . . .		1	Clark Univ. Lib'y. . .		3
Brown, W. M. . . . .	1		Clemson Agric. College		1
Buchtel College . . . .		2	Cleveland Pub. Lib'y .		3
Budapest Ak. d. Wiss.	1		Club of Odd Volumes .		1
Budd, Henry . . . . .		1	Clute, W. N. . . . .	2	1
Buenos Aires Museum.	1		Cobden Club . . . . .		4
Buffalo Charity Organ.			Cochrane, Gen. John .	1	
Soc. . . . .		2	Coit, G. M. . . . .		2
"    Forge Co. . . .	1		Colby, C. E. . . . .		11
"    Hist. Soc. . . .		1	"    J. F. . . . .		1
"    Library . . . .	1	1	Colby Univ. . . . .		2
Butler, N. M. . . . .	156	158	Cole, T. L. . . . .		1
California Equalization			Colgate University . .		6
Bd. . . . .		1	Colorado Agric. Coll. .		6
"    Highways			"    College and		
Bur. . . . .	1		Cutler Acad.		3
			"    P. E. Diocese		2

	Vols.	Pam.		Vols.	Pam.
Colorado Scientific Soc.		2	Denver University . .		8
" St. Engineer.	1		Denys, F. Ward . .		1
" Supt. Public			Depew, Chauncey M. .		2
Instr. . .	1		De Peyster, Gen. J.		
Columbia Institute for			Watts . . . . .	14	7
the Deaf and Dumb		1	Demilt Dispensary . .		1
Columbia Literary		6	Detroit Pub. Lib'y . .		1
Monthly . .	23		Dickinson Coll. . . .		5
" Engin. Soc.	1		District of Columbia		
" Observatory	46	85	Hospital . . . . .		1
" Polit. Sci.			Doane College . . . .		1
" Quarterly .	41	24	Dorpat University . .	28	36
" Press . . .	2		Draper, W. H. . . . .	124	
" Sch. of M'ns			Dresden Statis. Bur. .	1	
" Quarterly .	6		Drew Theol. Sem. . .		22
" University			Drexel Institute . . .	3	1
Studies in			Drisler, Henry . . . .	96	149
History, etc.	1		Drury College . . . .		11
Columbian University,			Dudley, Mrs. Lucy B.	1	
Wash. D.C.		1	Dudley, P. H. . . . .	1	
Commission to Investi-			Dunning, W. A. . . .	1	8
gate Venezuela			Dutt, R. P. . . . .	1	
Boundaries . . . .	5		Einhorn, Max . . . .		6
Congregational Home			Electricien . . . . .	2	
Missionary Soc. . .		2	Emerson, E. W. . . .		1
Conn. Educ. Board . .	1		Emory College . . . .		5
" Health " . . .	1		Engl. Incorp. Council		
" Insurance Com.	1		of Law Reporting .	2	
Cooke, J. P. . . . .	1		Enoch Pratt Free Lib'y		1
Cope, E. D. . . . .		7	Erb, Frank . . . . .	2	
Cornell Coll., Iowa . .		5	Erlangen Univ. . . . .		238
Cornell University . .		20	Essex Institute . . . .	1	
Cortina, R. D. . . . .	4		Eureka College . . . .		1
Council Bluffs Free			Ex dono Amici Litera-		
Library . . . . .		1	rum . . . . .	16	
Crapsey, A. S. . . . .	1		Fairchild, E. M. . . .		1
Crozier Theol. Sem. . .		1	Fairmont Park Art As-		
Cumberland University		1	sociation . . . . .		2
Curtis, Atherton . . .	2		Ferguson, C. . . . .		1
Curtis, John G. . . . .	1		Ferree, Barr . . . . .		3
Cutler School . . . . .		1	Field Columbian Mu-		
Dabney, C. W., Jr. . .		1	seum . . . . .		1
Da Costa, C. M. . . . .	6		Findlay College . . . .		9
Dante Soc. . . . .		1	Fish, Nicholas . . . .	2	
Darling, E. A. . . . .	3		Fisher, G. F. . . . .	5	
Dartmouth Coll. . . .		2	Fisher, G. P. . . . .	1	
Davenport Acad. Nat.			Fisk, Harvey E. . . .	1	
Sciences . . . . .	1		Fisk University . . . .		7
Davidson, I. . . . .	1		Fitchburg City Clerk	2	
Davidson College. . . .	1	4	Fletcher Free Library .		1
Davis, A. Mc. F. . . .		1	Florida Agric. Bd. . .		1
Dawson, S. E. . . . .		1	Forbes Library . . . .		1
Day, A. M. . . . .	9	4	Foster, Roger . . . . .	1	
Denison Univ. . . . .		6	France Bur. de Long .	1	
Denver Publ. Lib'y . .		1	Franklin College . . .		5

	Vols.	Pam.		Vols.	Pam.
Franklin & Marshall College . .		1	Heidelberg Univ. . .		120
Framjee Hormasjee Bomonjee . . . .		1	Henderson, Mrs. E. E. Hill School, Pottstown	1	1
Frazer, Persifor . . .		1	Hillsdale College . .		3
Freiberg, K. säch. Bergakademie . . . .	1		Hoar, Geo. F. . . .		1
Freiberg University .		95	Hoboken Free Lib'y .		1
French, A. D. W. . .	1		Hoeppli, U. . . . .	1	
Furman Univ. . . .		3	Hoffman, C. F. . . .	2	
Gentry, Ruth . . .	1		Holden, E. B. . . .	44	
Georgetown Univ. . .		2	" E. S. . . . .		3
Georgia Geol. Survey .		4	Honoré, C. . . . .	1	
" P. E. Diocese . .		1	Hope College . . . .		2
" University . . .		4	Houdard, A. . . . .	1	
Gibbs, Mrs. Th. K. .	29		Hovey, E. O. . . . .		1
Germ. K. preuss. Staatsarchiven . . . .	3		Howard Memorial Lib'y . . . . .		9
Giessen University . .		44	Howard Univ. . . . .		1
Gitterman, J. M. . .	1		Hutton, F. R. . . . .	1	
Gloucester City Council	1		Idaho, Univ. of . . . .		5
Godfrey, Miss L. B. .	1		Illinois College . . .		1
Goodnow, F. J. . . .	21	5	Illinois Factory Inspec.	2	4
Gordon, J. W. . . .	1		" Museum Nat. Hist.		1
Gorham Mfg. Co. . . .	1		Indian Rights Assoc. .		5
Gottheil, R. . . . .	1		Indianapolis Univ. . .		4
Göttingen Univ. . . .		102	Institution of Civil Eng.	5	
Gratz College . . . .	1		Iowa Acad. of Science	1	
Greece Nat. Gallery . .		1	" Agric. Ex. Station		18
Green, S. A. . . . .	1	5	" College, Grinnell		5
Greene, J. L. . . . .	1		" Supt. Pub. Instr.		3
Grinnell, W. M. . . .	1		" University . . . .		1
Grolier Club . . . .	1		Iron Age . . . . .	2	
Gulcke, H. F., Estate of	80	13	Iron & Steel Institute.	1	1
Gustavus Adolphus Coll. . . . .		2	Italy, Minister of Agric.	3	2
Halle-Wittenberg Univ. . . . .		129	" " Pub. Instr.	1	
Hamilton College . . .		1	Jackson, A. V. W. . .	3	
Hampden Sidney Coll.		14	Japan Imp. Coll. . . .	1	2
Hampton Agric. Inst.		2	Jersey City Free Lib'y		1
Harleian Soc. . . . .	1		Johns Hopkins Univ. .		27
Harrington, N. R. . .		1	Jones, Mrs. Samuel . .	67	
Hartford City Clerk .	1		Kalamazoo College . .		6
" Hospital . . . .		1	Kalbfleisch, C. C. . .	61	3
" Publ. Lib'y . . .		1	Kansas Acad. of Sci. .	1	
Harvard Univ. . . . .	4	2	" R. R. Com. . . .	1	
" Museum of Comp. Zoölogy . . . .		2	Kayve, M. . . . .	1	
Havemeyer, W. F. . .	1		Kellogg, Mrs. A. N. . .		1
Haverford Coll. . . .		25	Kemp, J. F. . . . .	1	
" " Obs. . . . .		1	Kenyon Coll. . . . .		1
Hazard, R. . . . .		1	Knights of Labor . . .	1	
Heating & Ventilation	1		Kinard, J. P. . . . .	1	
			Königsberg Univ. . . .		48
			Lafayette Coll. . . .		1
			Lake Forest Univ. . . .		1

	Vols.	Pam.		Vols.	Pam.
Lancashire & Cheshire Antiq. Soc. . . . .	1		Mass. Eye & Ear Infirmary . . . . .		1
Larchmont Yacht Club		1	" General Hospital		1
Lawrence Pub. Lib'y .		1	" Health Board . . . . .	1	
Leander McCormick Obs. . . . .		1	" Insurance Com. . . . .	2	3
Lehigh Univ. . . . .		1	" Lunacy & Charities . . . . .	1	
Leiden " Lib'y . . . . .	6	143	" P. E. Diocese . . . . .		1
Leipzig " " . . . . .		143	" R. R. Com. . . . .	1	
Leland Stanford, Jr. Univ. . . . .		7	" St. Library . . . . .		5
Lemcke & Buechner . . . . .	6		Master Car Builders Assoc. . . . .	1	
Lenient, C. . . . .	8		Mathews, A. . . . .	1	
Leonard, G. C. . . . .	1	1	Matthews, Brander . . . . .	73	17
Lewis, Mrs. Carvill	1		Meadville Theol. School . . . . .	1	
Liverpool Pub. Lib'y .		1	Melbourne Univ. . . . .	1	
Lockman, John T. . . . .	1		Mexico Educ. Bur. . . . .		1
Lockport Union School		1	Mich. Agric. Bd. . . . .	1	
London Royal Soc. . . . .	6	1	" Health Bd. . . . .	1	2
Long Island P. E. Diocese . . . . .		1	" Corrections & Charities . . . . .	1	
Los Angeles Pub. Lib'y		2	" Mining School . . . . .		2
Loubat, Duc de . . . . .	1		" St. Library . . . . .	7	4
Low, Seth . . . . .	52	106	" Univ. . . . .	1	5
Lowell City Lib'y . . . . .		1	Middlebury College . . . . .		4
" Water Bd . . . . .		1	Milwaukee Compt. . . . .	1	
Lozier, T. F. . . . .	16		" Museum . . . . .		14
Lund Univ. . . . .	1	24	" Publ. Lib'y . . . . .		6
Lyons Univ. . . . .		14	Minn. Hist. Soc. . . . .		3
McCormick, C. H. . . . .	1		" Univ. . . . .	1	3
McDonald, D. C. . . . .	1		Missouri R. R. Com. . . . .	1	
McGill College . . . . .	1		" Univ. . . . .		3
Macmillan & Co. . . . .	2		" Valley Coll. . . . .		2
McMullen, J. . . . .	1		Mitchell, J. M. . . . .		1
McNamee, J. H. H. . . . .		1	Morris, F. . . . .		1
Madras Museum . . . . .		5	" H. L. . . . .		1
Mahany, R. B. . . . .		1	Mount Holyoke Coll. . . . .		1
Maine Congregational Church Confer. . . . .		1	Mount St. Mary's Coll. . . . .		8
Maine School Supt. . . . .	1	1	Muhlenberg Coll. . . . .		1
Malden Pub. Lib'y . . . . .		3	Munroe, H. S. . . . .	1	
Malukoff, A. J. . . . .	5		Munson, M. A. . . . .		1
Manchester Water Com. . . . .		1	Museo de la Plata . . . . .		1
Manhattan Eye & Ear Hospital . . . . .		1	Nashville Health Bd. . . . .		3
Marburg Univ. . . . .		91	Nashville Univ. . . . .		1
Marietta College . . . . .		4	National Acad. of Sciences . . . . .		1
Maryland St. Lib'y . . . . .	1		" Assoc. of the Deaf . . . . .		1
Maryville College . . . . .		2	" Assoc. Wool Mfg. . . . .	1	
Mason, W. T. . . . .	1		" Civil Service Assoc. . . . .		4
Mass. Agric. Coll. . . . .		1	" Electric Light Assoc. . . . .	1	
" Civil Service Com. . . . .		1			
" Educ. Bd. . . . .	1				

	Vols.	Pam.		Vols.	Pam.
National Geographic Magazine . .	1		N. Y. City Pub. Charities . . . .		4
“ Municipal League . .		2	“ No. Side Bd. of Trade . .		1
Le Naturalist Canadien . . . . .	1		“ Union Club . .	1	
Nebraska Agric. Ex. Station . .		2	“ Y. M. C. A. . .		5
“ Univ. . .		22	N. Y. St. Assoc. opposed to Woman Suffrage . .	2	
Nelson, C. A. . .		8	“ Charities Aid Assoc. . .		2
Nevada Univ. . .		2	“ Civil Service Com. . .	1	
Newark Educ. Bd. . .	1		“ Colonization Soc. . . .		2
“ Pub. Lib'y . .	3		“ Factory Inspector . .	2	
Newton Free Lib'y . .	1		“ Fisheries Com. . .	2	
New Brunswick Nat. Hist. Soc. . . . .		9	“ Labor Bur. . .	2	
New Brunswick Theol. Sem. . . . .		1	“ Library . .	5	
New England Assoc. of Colleges . . . . .		1	“ Lunacy Com. . .	1	
New England Soc. of Brooklyn . . . . .		10	“ Public Instr. Supt. . .	10	
New Hampshire Agric. Bd. . . . .	1		“ Reformatory . .		1
New Haven Pub. Lib'y . .		2	“ Secretary of State . .	19	
New Jersey Adj. Gen. . .	1		“ Soc. of Cincinnati . .	1	
“ “ Bank Com. . .	1		“ University . .	1	4
“ “ Deaf-Mutes School . .	1		“ Veterinary Coll. . .		1
“ “ Labor Bur. . .	2		“ Woman's Hospital . .		1
“ “ P. E. Diocese . .		1	N. Y. Acad. of Sciences . .	2	
“ “ Treasurer . .	1		“ Engineers' Club . .	1	
New So. Wales Roy. Soc. . . . .	1		“ Free Circulating Lib'y . . . .		6
N. Y. City Aldermen . .	5		“ Hospital Soc. . .		1
“ Bar Assoc. . .	1		“ Infirmary . . .		1
“ Charity Organization Soc. . . .		2	“ Inst. for Blind . .		2
“ Comptroller . .	1		“ Law School . .		1
“ Dept. of Docks . .	4		“ Metropolitan Museum . . . .		11
“ Educ. Bd. . .	1		“ N. H. and Hartford R. R. Co. . .		1
“ Magistrates . .	2		“ Normal College . .		1
“ Mechanics Lib'y . .		2	“ Post-Graduate Med. School . .		1
“ Mercantile Lib'y . .		1	“ P. E. Diocese . .		1
“ Police Investigating Committ. . .		1	“ Shakespeare Soc. .		2
“ Produce Exchange . .	1		“ Sheltering Arms . .		1
			“ Society Lib'y . .		1

	Vols.	Pam.		Vols.	Pam.
N. Y. Soc. for Prevention of Cruelty to Children . .		I	Pierce Well Engin. Co.		2
" Soc. for Suppression of Vice . .		2	Planten, J. R. . . .	82	
" Yacht Club . .	I	I	Poland, W. C. . . .		2
North Carolina Agric. Ex. Station . .	I		Potter, W. W. . . .		2
" College . .		8	Pratt Institute . . .	4	
" University . .		30	Prince, C. Leeson . .	I	
North Dakota " . .		9	Princeton Theol. Sem.		18
Northwestern College . .		7	Princeton Univ. . . .	I	
Northwestern Univ. . .		2	Providence Auditor . .	I	
Notre Dame " . .		2	Providence Pub. Lib'y		2
Nova Scotia Mines Department . . . .		I	Provot, F. A. . . .	I	
Oberlin College . . . .		13	Queens College . . .	2	
Ohio Acad. of Science .		3	" " Quarterly . . .	3	
" Charities and Corrections . . . .		2	Quigley, J. G. . . .		I
" Factory Inspectors . .	I		Radcliffe College . .		28
" Insurance Com. . . .	2		Randolph and Macon College . . . .		6
" Secretary of State . .	10		Raphael, R. B. . . .	I	
" State Library . . . .	I		Revue Pédagogique . .	I	
" Univ. " . . . .		13	Reynolds, J. B. . . .	I	
" Wesleyan Univ. . . .		I	Rhode Island Ed. Bd. .	I	
Olivet College . . . .		I	" " Health Bd. . .	I	
Ontario Agric. Dept. . .		8	" " Industrial Statis. .	I	
" Live Stock As. . . .		I	Richardson, J. G. F. .	I	
" Minister of Ed. . . .	I		Ricketts, P. de P. . .	I	
Osterhout Free Lib'y . .	2		Ringwalt, R. C. . . .	I	
Pacific University . . .		10	Ripon College . . . .		2
Paris Inst. Nat. des Sourds-Mutes . .		2	Roanoke " . . . .		14
" Min. des Travaux Pub. . .	I		Roberts, Ja. A. . . .	I	
" Musée Social . . . .		2	" John T. . . . .	I	
Parker, H. C. . . . .	I		Rochester Acad. of Science . . . .		I
Parkman Club . . . .		8	Rockford Coll. . . .		I
Parsons, H. de B. . . .		I	Rollins College . . .		7
" J. R. . . . .	I		Roosevelt Hospital . .		I
" W. B. . . . .		I	Rosary Magazine . . .	2	
Passaic Valley Sewerage Com. . . . .	I		Rose Polytechnic Inst.		11
Peabody Institute . . .	2		Rosenberg, Leo von . .		I
Penn. College . . . .		13	St. Francis Hospital . .		I
" Sound Money . . .		18	St. Francis Xavier Coll.		13
" League . . . . .	23		St. Ignatius College . .		3
" State Lib'y . . . .		I	St. John's College, Annapolis . . . .		11
" Univ. . . . .	2		St. John's Coll., Fordham . . . . .		4
Philadelphia City Trusts Bd. . . . .		I	St. Joseph Pub. Lib'y .		I
" Free Lib'y . . . .		I	St. Louis " . . . .		I
" Lib'y Co. . . . .		I	St. Louis Univ. . . .		I
Phillips Academy . . .		3	St. Mary's Free Hospital . . . .		I
			St. Michael's Hospital .		I
			St. Olaf College . . .		I
			St. Petersburg Univ. .		4
			St. Xavier College . .		7

	Vols.	Pam.		Vols.	Pam.
Salem Pub. Lib'y . . .	1	10	Texas Normal School .		1
San Francisco Public Lib'y . . . . .		1	Texas Univ. . . . .		4
Santa Clara College .		20	Theta Delta Chi . . .	1	
Schiff, Jacob H. . . .	3		Thirteen Club of N. Y.		1
Schoolmasters' Assoc. .		2	Thomas, Calvin . . . .	6	
Scranton Pub. Lib'y .		1	Tiffany Glass Co. . . .	3	
See, T. J. J. . . . .	2		Tolman, W. H. . . . .	1	
Seligman, E. R. A. . .	105	157	Toronto Astronom. Soc.		2
Sellers, E. J. . . . .		1	"    Engineering " .		1
Senff, Charles H. . . .	380		Toronto University . .	2	1
Shearmann, T. G. . . .		166	Torrey Botanical Club .	18	
Shepherd, W. R. . . .	1		Townsend, M. . . . .	1	8
Sickels, D. B. . . . .	1		Trinity Church Corp. .	1	
Simonson, G. . . . .	6	3	Trinity College, Dur-		
Smithsonian Institution	15	32	ham . . . . .		1
Sociedad Cientifica Ar-			Trinity Coll., Hartford.		1
gentina . . . . .	2		Trinity Coll., Toronto .		1
Society for the Promo-			Tübingen Univ. . . . .		2
tion of Engineering			Tuck, S. R. . . . .	1	
Educ. . . . .	1		Tufts College . . . . .		1
Society of St. Johnland		1	Tulane Univ. . . . .		2
Somerville City Clerk .	1		Uhl, Mrs. J. M. . . . .	385	29
So. Carolina College .		3	Underwood, L. M. . . .	2	
Springfield City Lib'y		4	Union League Club,		
Assoc. . . . .		2	Chicago . . . . .	1	
"    Pub. Lib'y .		1	Union League Club,		
"    School Supt.		2	N. Y. . . . .	1	
Standard Underground			Union Theol. Sem. . . .		1
Cable Co. . . . .	1		Unitarian Church Nat.		
Stark, F. R. . . . .		1	Con. . . . .		1
Stechert, G. E. . . . .		2	U. S. Agric. Dept. . . .		162
Stephens, Kate . . . .	7		"    Bur. of American		
Sterne, Simon . . . . .	3		Ethnology. . . .		7
Stevens, W. LeConte .		1	"    Bur. of American		
Stockholm Univ. . . .	4		Republics . . . .		6
Stoiber, A. H. . . . .		1	"    Civil Service		
Stokes, Anson P. . . .	1		Com. . . . .		3
Stone, A. . . . .		6	"    Congress . . . . .	103	23
Stonyhurst Coll. Obs.		1	"    Educ. Bur. . . . .	8	4
Strassburgh Univ. . . .		21	"    Fish Com. . . . .	3	
Strobel, Edw. H. . . .	12		"    Geol. Survey . . .	6	1
Sturgis, Russell . . . .	2		"    Immigration		
Stuttgart Tech. Hoch-			Com. . . . .	1	
Schule . . . . .		2	"    Interstate Com.		
Sutro Library . . . . .		6	Com. . . . .	1	
Swarthmore College . .		1	"    Interior Dept. . .	12	21
Swords, Henry C. . . .	1		"    Labor Com. . . . .	6	2
Sydney Univ. . . . .	1		"    Military Acad. . . .		1
Syracuse Central Lib'y		1	"    Naval Obs. . . . .	2	2
Syracuse Univ. . . . .		1	"    Navy Dept. . . . .	7	1
Tabor College . . . . .		1	"    Patent Office . . . .	8	2
Teachers College . . . .		1	"    R. R. Com. . . . .	1	
Tennessee Univ. . . . .		19	"    State Dept. . . . .	5	17
Tewksbury Almshouse		1	"    Treas. " . . . .	15	25
			"    War " . . . . .	4	

	Vols.	Pam.		Vols.	Pam.
University Club . . .	1		Webster, W. C. . . .	12	10
University Settlement			Wellcome, H. S. . . .	1	
Soc. . . . .		1	Wells College . . . .		7
Upsala Univ. . . . .		63	Wesleyan Univ., Conn.		11
Utah " . . . . .		8	" " Ohio . . . .		2
Utrecht " . . . . .	23	39	" " Mon-		
Valentine, J. J. . . . .	1		tana . . . . .		2
Vanderbilt Univ. . . .		10	Western Reserve Univ.		2
Vandergrift, F. B. . .		1	West Virginia " . .		4
Vassar Coll. . . . .		1	Whitman College . . .		3
Vermont Agric. Ex.			Whittaker, T. . . . .	1	
Station . . . . .		6	Wien Univ. . . . .		5
" Hist. Soc. . . . .	1		Wilcox, David . . . .	4	
" P. E. Diocese . . .		1	Willamette Univ. . . .		2
" St. Lib'y . . . . .	16	8	Williams Coll. . . . .		12
" Univ. . . . .		1	William Jewell College		1
Vick's Monthly Maga-			Winsor, Justin . . . .		2
zine . . . . .	1		Winthrop, Rob. C., Jr.	1	
Victoria Bd. of Trade		1	Wisconsin Adj. Gen. .		2
" Legislative			" Humane		
Lib'y . . . . .	2	1	Educ. Soc. . . . .		6
" Mines Dept. . . .		1	" Labor Bur. . . . .	1	
" Univ. . . . .	1		" Hist. Soc. . . . .		4
Virginia Univ. . . . .		3	" St. Lib'y . . . . .	1	
Vogdes, A. W. . . . .	6		" Treas. . . . .	1	
Volta Bureau . . . . .		10	" Univ. . . . .	1	8
Wabash College . . . .		15	Woodward, B. D. . . .	7	
Wadlin, H. G. . . . .	1		Worcester Pub. Lib'y .	1	
Ward, J. . . . .		1	" Supt. Pub.		
Washburn Coll. . . . .		1	Instr. . . . .		1
Washington Biol. Soc.		8	Wurzberg Univ. . . . .		7
" Philosoph.			Wyoming " . . . . .		3
Soc. . . . .	2		Yale Univ. . . . .	2	
Washington Univ. . . .		1	Zopke, Hans. . . . .		1
Washington & Jeffers'n			Giver Unknown . . . .	148	189
Coll. . . . .		9			
Washington St. Univ. .		6		3403	5009
Watertown Pub. Lib'y		1			

TREASURER'S STATEMENT OF EDUCATIONAL  
RECEIPTS AND DISBURSEMENTS FOR THE  
YEAR ENDING JUNE 30, 1897.

RECEIPTS.

Receipts from—

Rents.....	\$394,941 00
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Fees :

Examination Fees.....	\$	80 00
Matriculation Fees.....		4,475 00
Tuition Fees.....		282,413 74
Diploma Fees.....		6,983 00
		293,951 74

Students :

For Breakage, Supplies, and Material.....	8,210 26
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Barnard College :

For Salaries.....	12,000 00
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Interest on Deposits.....	2,453 83
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Interest on Rents.....	847 90
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Income from Invested Funds for :

Salaries.....	8,680 22
Fellowships, Scholarships, and Prizes.....	5,259 50
Library—Books.....	3,994 06
Drisler Classical Fund.....	164 20
Sloane Maternity Fund.....	12,500 00
Vanderbilt Clinic.....	5,650 00
College of Physicians and Surgeons General Fund.....	2,949 00
	39,196 98

Carried forward.....	\$751,601 71
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Brought forward . . . . .		\$751,601 71
Funds Provided by Gift for Current		
Uses :		
Salaries . . . . .	\$2,250 00	
Fellowships and Prizes . . . . .	2,815 00	
Apparatus . . . . .	500 00	
Public Lectures . . . . .	1,000 00	
Library, for Books . . . . .	16,073 61	
	<hr/>	22,638 61
Sundries :		
Lectures, Sales of Tickets . . . . .	177 00	
Catalogues—Sales . . . . .	57 00	
Library—Fines and Sales of Du-		
plicates . . . . .	373 61	
Sale of History of College of		
Physicians and Surgeons . . . . .	4 50	
	<hr/>	612 11
		<hr/>
		\$774,852 43

## DISBURSEMENTS.

## Business Administration :

Salaries.....	\$9,450 00	
Wheelock Property .....	1,350 84	
Office Rent.....	1,100 00	
Contingent Expenses of Treasurer's Office .....	2,859 59	
Contingent Expenses of Clerk's Office .....	1,296 29	
Insurance.....	3,087 89	
Interest Payable on Bonds School of Medicine (Coll. of P. and S.)..	6,525 00	
	<hr/>	\$25,669 61

## Educational Administration :

Salaries .....	33,108 50
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## General Administration :

General Catalogue.....	250 00	
Printing.....	5,954 75	
Printing and Distributing Presi- dent's Report.....	1,074 68	
Advertising.....	2,034 23	
Bulletin.....	750 00	
Lectures.....	3,771 95	
Commencement .....	978 74	
Baccalaureate .....	88 30	
President's Emergency Fund.....	1,653 84	
Philolexian Society.....	159 45	
Barnard Literary Society.....	149 00	
Encouragement of Rowing.....	1,132 62	
Gymnastic Exercises, including Ath- letic Grounds .....	4,700 00	
Bureau of Supplies.....	5,500 00	
Diplomas.....	718 75	
Tuition Fees, Teachers College....	553 59	
	<hr/>	29,469 90
Carried forward.....		<hr/> \$88,248 01

Brought forward.....		\$88,248 01
Buildings and Grounds :		
Wages, Boiler House, and Janitorial		
Service.....	\$20,999 47	
Repairs, Furniture, and Fixtures...	6,958 66	
Gas and Electricity.....	3,975 33	
Fuel.....	4,998 60	
Cleaning.....	1,177 38	
Superintendent's Supplies.....	2,840 13	
Rent of two Buildings.....	3,815 70	
Water Rates.....	1,402 40	
Uniforms.....	496 77	
Library Shelving.....	146 70	
	<hr/>	46,811 14
Chapel :		
Salaries .....		2,047 50
Emeritus Officers :		
Salaries .....		4,775 00
Fellowships, Scholarships, and Prizes :		
University Fellowships.....	12,000 00	
Tyndall Fellowship.....	486 00	
Brooklyn Scholarships.....	450 00	
Brooklyn Scholarships at Barnard		
College.....	450 00	
President's University Scholarships.	300 00	
Henry Drisler Fellowship.....	500 00	
Class of '70 Fellowship. ....	500 00	
Curtis Scholarship at Barnard College	150 00	
Seligman Fellowship.....	250 00	
Columbia Fellowship in Architecture	1,300 00	
University Scholarships.....	4,125 00	
Chanler Historical Prize.....	60 00	
Toppan Prize.....	150 00	
Alumni Fellowship at College of		
Physicians and Surgeons.....	1,500 00	
Annual Fellowships.....	915 00	
Pulitzer Scholarships.....	2,579 50	
Clark Scholarship.....	670 00	
	<hr/>	26,385 50
Carried forward.....		\$168,267 15

Brought forward.....		\$168,267 15
Library :		
Salaries.....	\$28,249 99	
Books and Binding.....	12,331 25	
Incidentals.....	1,437 21	
Townsend Collection.....	720 71	
Senff Collection in History.....	93 63	
Senff Collection in Biology.....	262 50	
Adams Collection in History.....	347 33	
Babcock Collection in History.....	500 00	
Special Fund 1894.....	1,792 31	
Special Fund 1895.....	1,695 91	
Special Fund 1896.....	6,340 04	
Books in Sociology.....	4 80	
Books in Music.....	500 00	
Books in Sanskrit.....	50 00	
Crimmins Collection.....	926 13	
Avery Architectural Collection....	3,861 26	
Barnard Library Fund.....	2,885 19	
Cotheal Fund.....	87 86	
	<hr/>	62,086 12
Department of Architecture :		
Salaries.....	23,100 00	
Departmental Appropriation.....	2,000 00	
Models.....	300 00	
	<hr/>	25,400 00
Department of Astronomy :		
Salaries.....	8,600 00	
Departmental Appropriation.....	249 75	
Observatory for Apparatus.....	312 00	
Summer Class in Geodesy.....	1,000 00	
Geodesy for Instruments.....	250 00	
	<hr/>	10,411 75
Department of Botany :		
Salaries.....	5,100 00	
Departmental Appropriation.....	999 48	
	<hr/>	6,099 48
Department of Chemistry :		
Salaries.....	25,500 00	
Departmental Appropriation.....	12,135 09	
	<hr/>	37,635 09
Carried forward.....		\$309,899 59

Brought forward.....		\$309,899 59
<i>Engineering.</i>		
Department of Civil Engineering :		
Salaries.....	\$8,300 00	
Departmental Appropriation.....	230 01	
Summer School in Surveying....	1,999 30	
Tents, Improvements at Farm...	249 31	
Rent of Farm.....	150 00	
Instruments for Summer School in Surveying (Repairs).....	494 31	
Hydraulic Laboratory.....	198 97	
	<hr/>	11,621 90
Department of Electrical Engineer- ing :		
Salaries.....	7,400 00	
Departmental Appropriation.....	1,499 96	
	<hr/>	8,899 96
Department of Mechanical Engi- neering :		
Salaries.....	10,000 00	
Departmental Appropriation.....	499 41	
Mechanical Laboratory—Summer School.....	749 62	
Drawing.....	299 97	
	<hr/>	11,549 00
<i>English.</i>		
Department of the English Lan- guage and Literature :		
Salaries.....		7,500 00
Department of Literature :		
Salaries.....	10,000 00	
Departmental Appropriation.....	69 13	
	<hr/>	10,069 13
Department of Rhetoric:		
Salaries.....	7,700 00	
Departmental Appropriation . . . .	25 66	
	<hr/>	7,725 66
Carried forward.....		<hr/> \$367,265 24

TREASURER'S STATEMENT

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Brought forward.....		\$367,265 24
Department of Geology :		
Salaries.....	\$7,300 00	
Departmental Appropriation.....	320 96	
Summer School in Geology.....	200 00	
		7,820 96
Department of the Germanic Lan- guages and Literatures :		
Salaries.....	11,500 00	
Departmental Appropriation.....	42 14	
		11,542 14
Department of Greek :		
Salaries.....	11,500 00	
Departmental Appropriation.....	44 59	
		11,544 59
Department of Hygiene and Sanitary Science :		
Salaries.....	2,000 00	
Departmental Appropriation.....	522 02	
		2,522 02
Department of Latin :		
Salaries.....	9,700 00	
Departmental Appropriation.....	13 20	
		9,713 20
Department of Mathematics :		
Salaries.....		17,550 00
Department of Mechanics :		
Salaries.....	11,900 00	
Departmental Appropriation.....	2 09	
Apparatus (New).....	222 53	
		12,124 62
Department of Mineralogy and Metal- lurgy :		
Salaries.....	15,000 00	
Departmental Appropriation.....	997 28	
Apparatus .....	599 84	
		16,597 12
Carried forward.....		\$456,679 89

Brought forward.....		\$456,679 89
Department of Mining :		
Salaries.....	\$8,500 00	
Departmental Appropriation, in- cluding Summer School in Mining.	1,986 39	
Apparatus .....	250 00	
	<hr/>	10,736 39
Department of Music :		
Salaries.....	5,000 00	
Lectures.....	746 22	
	<hr/>	5,746 22
Department of Oriental Languages :		
Salaries.....	7,500 00	
Departmental Appropriation.....	98 46	
	<hr/>	7,598 46
Department of Philosophy and Edu- cation :		
Salaries.....	11,400 00	
Departmental Appropriation.....	249 79	
	<hr/>	11,649 79
Department of Physical Anthropology :		
Salaries.....		1,500 00
Department of Physics :		
Salaries.....	17,508 30	
Departmental Appropriation.....	1,499 58	
	<hr/>	19,007 88
Department of Psychology :		
Salaries.....	3,500 00	
Departmental Appropriation.....	499 92	
Apparatus .....	250 00	
	<hr/>	4,249 92
Department of the Romance Lan- guages and Literatures :		
Salaries.....	13,800 00	
Departmental Appropriation.....	14 00	
	<hr/>	13,814 00
Department of Zoölogy :		
Salaries.....	13,300 00	
Departmental Appropriation.....	1,100 00	
Marine Table, Wood's Holl.....	100 00	
	<hr/>	14,500 00
Carried forward.....		\$545,482 55

Brought forward.....		\$545,482 55
School of Law :		
Salaries.....	\$34,100 00	
Departmental Appropriation.....	11 60	
	<hr/>	34,111 60
School of Political Science :		
Salaries.....	60,500 00	
Departmental Appropriation.....	119 05	
	<hr/>	60,619 05
School of Medicine (COLLEGE OF PHYSICIANS AND SURGEONS) :		
Educational Administration :		
Salaries.....		4,000 00
General Administration :		
Printing and Postage on Cata- logue of School of Medicine...	962 10	
Alcohol .....	361 04	
Office Supplies and Sundries....	405 15	
Insurance.....	3,272 90	
Museum for Supplies....	249 87	
	<hr/>	5,251 06
Buildings and Grounds :		
Wages, Boiler House, and Jani- torial Service.....	13,491 38	
Repairs, Furniture, and Fixtures.	2,996 26	
Gas and Electricity.....	2,997 96	
Fuel .....	6,499 80	
Cleaning.....	997 04	
Water Rates.....	1,471 10	
Superintendent's Supplies.....	2,503 94	
	<hr/>	30,957 48
Department of Anatomy :		
Salaries.....	19,420 00	
Material.....	1,749 92	
Supplies.....	2,199 93	
	<hr/>	23,369 85
Department of Chemistry and Physics :		
Salaries.....	13,250 00	
Supplies.....	1,497 97	
	<hr/>	14,747 97
Carried forward .....		<hr/> \$718,539 56

Brought forward.....		\$718,539 56
Department of Clinical Instruction :		
Salaries.....		8,400 00
Department of Materia Medica and Therapeutics :		
Salaries.....	\$7,500 00	
Departmental Appropriation.....	16 90	
	<hr/>	7,516 90
Department of Obstetrics and Gynecology :		
Salaries.....	11,000 00	
Departmental Appropriation.....	65 40	
	<hr/>	11,065 40
Department of Pathology :		
Salaries.....	24,510 65	
Supplies.....	2,492 18	
Special Apparatus.....	754 03	
	<hr/>	27,756 86
Department of Physiology :		
Salaries.....	12,500 00	
Departmental Appropriation.....	806 03	
	<hr/>	13,306 03
Department of Practice of Medicine :		
Salaries.....		10,500 00
Department of Surgery :		
Salaries.....	11,600 00	
Departmental Appropriation.....	259 70	
	<hr/>	11,859 70
		<hr/>
Total.....		\$808,944 45
		<hr/>
Excess of Disbursements over Receipts :		\$34,092 02

## GIFTS FOR OTHER THAN CURRENT USES.

Seth Low.....	\$125,000 00
William C. Schermerhorn.....	100,000 00
Fayerweather Legacy.....	19,362 46
Abram S. Hewitt.....	1,000 00
H. C. Bunner Fund.....	1,000 00
Robert Center Fund.....	27,373 50
Estate of Joseph W. Harper.....	5,000 00
	<hr/>
	\$278,735 96

## GIFTS FOR CURRENT USES.

## For Uses of the Library :

F. A. Schermerhorn.....	\$ 500 00
A Friend.....	900 00
Seth Low.....	500 00
S. D. Babcock.....	500 00
G. K. Sheridan.....	50 00
S. P. Avery.....	2,840 25
John D. Crimmins.....	1,000 00
	<hr/>
	\$6,290 25

## For Special Purposes :

F. A. Schermerhorn.....	1,000 00
Miss Margaret B. Edson.....	1,000 00
W. C. Schermerhorn.....	250 00
William E. Dodge.....	250 00
Friends of the College.....	2,500 00
	<hr/>
	5,000 00

## For Fellowships and Prizes :

Alumni Association, College of Physicians and Surgeons.....	1,375 00
Prof. Henry F. Osborn.....	500 00
University Settlement Society.....	375 00
R. N. Toppan.....	150 00
	<hr/>
	2,400 00
	<hr/>
	\$13,690 25

STATEMENT OF COST OF NEW SITE  
TO JUNE 30, 1897.

## PAYMENTS.

Purchase of Land.....	\$2,000,000 00
Legal Expenses.....	3,637 95
Care of Site.....	17,245 84
Interest .....	161,082 35
	<hr/>
	\$2,181,966 14

## RECEIPTS.

Purchase Money Mortgage.....	\$1,000,000 00
Donations.....	426,150 00
Fayerweather Legacy.....	208,291 17
Hamilton Fish Bequest.....	50,000 00
Pulitzer Fund.....	49,551 25
From Interest on Deposits.....	11,290 94
From Rents.....	4,510 00
From Award Widening 120th Street.....	922 50
From Loan.....	431,250 28
	<hr/>
	\$2,181,966 14

STATEMENT OF IMPROVEMENT OF NEW SITE  
TO JUNE 30, 1897.

## PAYMENTS.

Appraisals, Maps, and Surveys.....	\$ 2,858 71
Advertising .....	5,070 67
Architects' Fees.....	36,722 44
Grading, Curbing, and Flagging.....	11,596 87
Retaining Walls.....	15,332 63
Furniture and Fixtures.....	1,000 00
Incidental Expenses.....	2,428 19
Insurance ....	290 32
Granite Walls and Fence.....	41,692 50
Removing Buildings, Walls, and Fences.....	2,969 75
Excavating Trench.....	580 00
Temporary Wooden Fence.....	490 45
Iron Fence.....	17,348 00
Corduroy Road.....	577 16
Repairing West Building.....	2,174 00
	<hr/>
Carried forward.....	\$141,131 69

Brought forward.....	\$141,131 69
Rebuilding Observatory.....	340 00
Sewer Connections.....	4,804 00
Walls, Fences, etc., Architects' Commissions.....	2,336 15
Dedication.....	8,434 59
Dedication Record.....	991 25
Incidental Work.....	5,304 66
Expenses of Removal.....	6,274 54
Excavating Entrance Court.....	4,841 45
Tunnels.....	14,431 00
Tunnels, Architects' Commissions.....	558 27
Brick Sewers in Amsterdam Avenue.....	1,043 50
Brick Sewers.....	20,870 00
Brick Sewers and Drainage of Park.....	2,770 56
Paving 116th Street.....	11,938 05
Excavations, Surveys, etc.....	2,749 35
	<hr/>
	\$228,819 06

## RECEIPTS.

From Sale of Dedication Record...	\$ 187 00
From Loan.....	228,632 06
	<hr/>
	\$228,819 06

STATEMENT OF COST OF NEW BUILDINGS  
TO JUNE 30, 1897.

## PAYMENTS.

Physics Building.....	\$216,788 10
Schermerhorn Hall.....	335,942 69
Library.....	780,499 91
University Building.....	319,483 24
Havemeyer Hall.....	335,603 72
Engineering Building.....	191,230 73
Vaults.....	90,888 36
Boiler House Equipment.....	912 50
South Entrance Court.....	26,460 87
	<hr/>
	\$2,297,810 12

## RECEIPTS.

W. C. Schermerhorn.....	\$ 300,000 00
Seth Low.....	225,000 00
From Sale of Old Bricks.....	6,019 47
From Loan.....	1,766,790 65
	<hr/>
	\$2,297,810 12

## SCHEDULES OF FUNDS.

## Gebhard Fund :

West Shore Railroad Co.'s Guaranteed 4 per cent. First Mortgage Bonds, due 2361.....	\$20,000 00
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## McKim Fellowship Fund :

St. Paul, Minneapolis, and Manitoba Railroad Co.'s 4½ per cent. Consolidated Mortgage Bonds, due 1933.....	\$20,000 00
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## Tyndall Fellowship Fund :

West Shore Railroad Co.'s Guaranteed 4 per cent. First Mortgage Bonds, due 2361.....	\$11,000 00
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## Avery Architectural Fund :

Lehigh Valley Railroad Co.'s 4½ per cent. First Mortgage Bonds, due 1940.....	\$15,000 00
Cash .....	10,000 00

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\$25,000 00

## Columbia Fellowship Fund :

Lehigh Valley Railroad Co.'s 4½ per cent. First Mortgage Bonds, due 1940.....	\$13,000 00
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## Moffatt Scholarship Fund :

St. Paul, Minneapolis, and Manitoba Railroad Co.'s 4½ per cent. Consolidated Mortgage Bonds, due 1933.....	\$2,000 00
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## Schmerhorn Scholarship Fund :

St. Paul, Minneapolis, and Manitoba Railroad Co.'s 4½ per cent. Consolidated Mortgage Bonds, due 1933.....	\$5,000 00
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## Chanler Prize Fund :

St. Paul, Minneapolis, and Manitoba Railroad Co.'s 4½ per cent. Consolidated Mortgage Bonds, due 1933.....	\$1,000 00
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## Joseph F. Loubat Fund :

\$7,000 Buffalo, Rochester, and Pittsburg Railway Co.'s Gen- eral Mortgage 5 per cent. Gold Bonds, due 1937.....	\$6,979 75	
Cash Deposited with the New York Life Insurance and Trust Company, Balance of Fund at 3 per cent.....		20 25
		<u>\$7,000 00</u>

## Frederick A. P. Barnard Fund :

Bond and Mortgage on Property at Nos. 719 and 721 Ninth St., N. Y. City, at 6 per cent., due July 16, 1883.....	\$7,500 00	
Eight Coupon Bonds, B, of Pit- kin Co., Colorado, at 6 per cent., \$500 each, Nos. 11 and 66 to 72 inclusive .....	4,000 00	
\$11,000 Buffalo, Rochester, and Pittsburg Railway Co.'s Gen- eral Mortgage 5 per cent. Gold Bonds, due September 1, 1937.	10,960 57	
\$24,000 Illinois Central Railroad Co.'s 4 per cent. Gold Bonds of 1933, at 4 per cent., \$22,550, 1 month and 4 days' interest at 4 per cent., \$90.67.....	22,650 67	
Two Mortgage Deeds on Prop- erty at Litchfield, Conn., and two Promissory Notes for \$3,500, at 5 per cent., and \$1,000 at 6 per cent. (Orig- inally \$1,500).....	4,500 00	
Received on account of above \$1,500 Mort- gage at 6 per cent. Cash.....	\$ 500 00	
Cash.....	<u>21,974 97</u>	
	<u>22,474 97</u>	
		<u>\$72,086 21</u>

Robert Center Fund for Instruction in Music, founded by his mother :	
\$4,000 Belleville & Carondelet Railroad Co.'s First Mortgage 6 per cent. Bonds, due June 1, 1923, at 114, and interest for 21 days at 6 per cent. ....	\$4,574 00
\$6,000 Georgia Pacific Railroad Co.'s First Mortgage 6 per cent. Gold Bonds, due June 1, 1922, at 112 $\frac{3}{8}$ , and interest for 5 months and 21 days at 5 per cent .....	6,885 00
Bond and Mortgage on Property No. 436 East 87th Street, N.Y. City, at 5 per cent., due October 19, 1899.....	5,000 00
Cash.....	22,794 50
	<hr/>
	\$39,253 50
440 East 87th Street, N. Y. City.	
437 East 86th Street, N. Y. City.	
441 East 86th Street, N. Y. City.	
129 West 17th Street, N. Y. City.	
Plot No. 1 Malbone Street, N. side W. of Bedford Avenue, Brooklyn, New York.....	
Plot No. 2, Malbone Street, S. side of N. W. of Rogers Avenue, running through to Sterling Street (unopened) 400x200, partly covered by water, about 17 lots, Brooklyn, New York..	
Plot No. 3, Nos. 320 to 334 Flatbush Avenue, Brooklyn, New York.....	
Plot No. 4, Butler Street, S. side, 100 feet 11 inches W. of Utica Avenue, 175 feet 2 inches front, running through to Douglas Street, Boulevard, Brooklyn, New York.....	

Plot No. 5, Douglas Street, Boulevard, S. side 178 feet 1 inch front, running southerly a depth of about 143 feet, with gore on Utica Avenue, Brooklyn, New York.....

Plot No. 6, Schenectady Avenue, E. side, Union to President Street, Brooklyn, New York..

200 Shares American Cotton Oil Company's Common Stock...

100 Shares General Electric Company.....

100 Shares Edison Electric Illuminating Company of New York.....

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Charles M. Da Costa Fund :

Central Railroad Co. of New Jersey, 5 per cent. Mortgage Bonds, due 1987.....	\$20,000 00
New York, Lake Erie, and Western Railroad Co.'s (Docks and Improvements) 6 per cent. First Mortgage Bonds, due 1913.....	25,000 00
New Jersey Junction Railroad Co.'s 4 per cent. First Mortgage Guaranteed Bonds, due 1986..	25,000 00
Lehigh Valley Terminal Railroad Co.'s First Mortgage 5 per cent. Gold Bonds, due 1940.....	10,000 00
\$20,000 Pittsburg, Chicago, Cincinnati, and St. Louis Railroad Co.'s Consolidated Mortgage 4½ per cent. Bonds, Series B..	20,167 50

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\$100,167 50

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## Trowbridge Scholarship Fund :

Lehigh and Hudson Railroad Co.'s First Mortgage (6) re- duced to 5 per cent. Gold Bonds, due July 1, 1911.....	\$10,231 94
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## Fund of a Member of Class '85 :

Cash.....	\$1,050 00
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## James Gordon Bennett Prize Fund :

\$1,000 West Shore Railroad Co.'s Guaranteed 4 per cent. First Mortgage Bonds, due 2361, at 102 $\frac{7}{8}$ .....	\$1,028 75
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## Joseph Pulitzer Fund :

\$25,000 Niagara Falls Power Co.'s First Mortgage 5 per cent. Bonds at 90 flat.....	\$22,500 00
\$29,000 Manhattan Elevated Railroad Co.'s 4 per cent. Con- solidated Bonds at 96 $\frac{3}{8}$ , in- cluding commission.....	27,948 75
Cash.....	49,551 25
	<u>\$100,000 00</u>

## Alexander I. Cotheal Fund :

Bond and Mortgage on Property No. 437 East 86th Street, N.Y. City, at 4 $\frac{1}{2}$ per cent., due June 19, 1901.....	\$6,000 00
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## Students' Loan Fund :

Cash Deposited with New York Life Insurance and Trust Co. at 3 per cent.....	\$5,000 00
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## Drisler Classical Fund :

Cash.....	\$10,000 00
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## Margaret Barnard Fund :

Cash.....	\$15,889 41
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## Sampson Simpson Fund :

Cash.....	\$1,000 00
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## John McKeon Fund :

Cash .....	\$1,000 00
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## W. C. Illig Fund :

Cash .....	\$2,000 00
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## Stuart Scholarship Fund :

Cash .....	\$6,000 00
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## Philolexian Prize Fund :

Cash .....	\$1,240 00
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## Sloane Maternity Hospital Fund :

Michigan Central Railroad Co.'s (Detroit and Bay City) First Mortgage 5 per cent Bonds, due March 1, 1931 .....	\$125,000 00
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Chicago and Northwestern Rail- road Co.'s 5 per cent. Sinking Fund Debenture Bonds, due May 1, 1933 .....	125,000 00
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	\$250,000 00
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## Harsen Fund :

28 Shares of United New Jersey Railroad and Canal Co.'s stock of \$100 each, at 227 $\frac{1}{8}$ , includ- ing commission .....	\$ 6,382 25
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Bond and Mortgage on Property No. 17 East 45th Street, N. Y. City, at 4 $\frac{1}{2}$ per cent. ....	15,000 00
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Cash .....	9,731 85
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	\$31,114 10
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## Vanderbilt Clinic Endowment Fund :

Michigan Central Railroad Co.'s (Detroit and Bay City) First Mortgage 5 per cent. Bonds...	\$100,000 00
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Chicago and Northwestern Rail- road Co.'s 4 per cent Extension Bonds .....	10,000 00
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Canada Southern Railroad Co.'s Second Mortgage 5 per cent. Bonds .....	5,000 00
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	\$115,000 00
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## Clark Scholarship Fund :

17 Shares of United New Jersey  
Railroad and Canal Co.'s Stock  
of \$100 each, at  $227\frac{1}{8}$ , includ-  
ing commission..... \$3,874 94

Bond and Mortgage on Property  
No. 333 West 31st Street, N.Y.  
City, at 5 per cent., due March  
1, 1899..... 10,000 00

Cash..... 125 06

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\$14,000 00

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## J. M. Smith Fund :

11 Shares of the United New Jer-  
sey Railroad and Canal Co.'s  
Stock of \$100 each, at  $229\frac{3}{4}$ ,  
including commission..... \$2,527 25

## Stevens Fund :

9 Shares of the United New Jer-  
sey Railroad and Canal Co.'s  
Stock of \$100 each, at  $227\frac{1}{8}$ ,  
including commissions..... \$2,051 44

## School of Medicine, General Fund :

\$12,000 Union Pacific Railroad  
Co.'s 6 per cent. Bonds..... \$12,762 50

\$18,000 Central Pacific Railroad  
Co.'s 6 per cent. Bonds..... 19,035 00

Cash..... 34,202 50

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\$66,000 00

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## H. C. Bunner Gold Medal Fund :

Cash..... \$1,000 00

## Joseph W. Harper Bequest :

Cash..... \$5,000 00

JOHN McL. NASH,  
*Treasurer.*







